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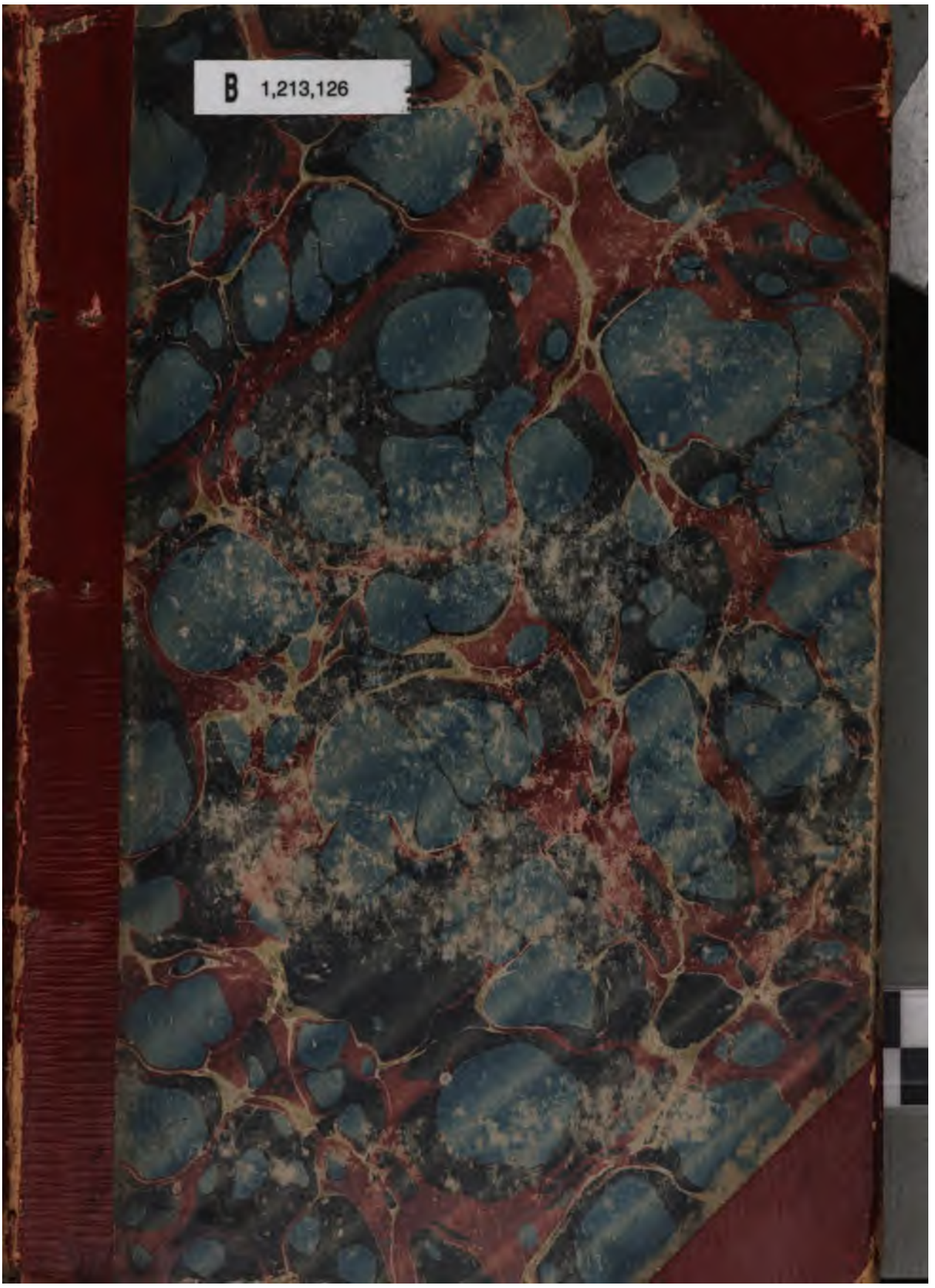
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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

EDITED BY

THE HONORARY SECRETARIES.

JANUARY TO DECEMBER,

1884.

CALCUTTA:

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APPENDIX.

INSCRIPTIONS ON THE TWO STONES REFERRED TO IN Mr. PARRY'S PAPER,

PROCEEDINGS, DECEMBER 1883,

pp. 165-168.

FIRST STONE.

TOP.

[1] ◡ నుచుయు.

[2] మనిచంను ఆంగరంగవయి.

[3] వరను శరిగప శలిపమ టరచుకు.

[4] వరకుమరడగు * యంరర * *

[5] §) వత్సరభాద్ర పదశుద్ధ నామబశవ స్తనుజ.

[6] కాత్రకస్తు శబాతులమునలిచెదను ద్వరడవురిశ్వరేమాద.

[7] ద్రాదావలయిననందికను మననడిచిపోయనానాది.

[8] మాడదిముఖ్యమయిన చాలుమూల శమ స్తబక్రదుంనుచుడిన్వింమ.

[9] ద్వరదివర దిననడిద్వరదివరముశా నాపశచవండుశ్రజకుబ.

[10] సినానాడాలపూచుండినడుమన హమండశం ఆంపంబరగయిపానెమ.

[11] యదవమహరాజుల కుమారుండు పాకంములుడయిచ్చినడడసాశన.

[12] నందికనుమనువాడే వూడ్రాలుతప్పకుండునునడుపించె ఆందురు.

[13] యిచ్చినమూలసాలునానాడు న్యాలలకును ప్రతియేడుప యికిశాను.

[14] రిశానుదూదిమంలదిదుడుదకూతలి శాశమియాలపొంకుకు.

[15] దు-ం-కి దిందుడమాలటిశానుయి స్థిరిగాన లిచుప్రాక స్తాయిగాను ఆ.

[16] నుఖవించ్చుదాండప్పయాడమాశాశనతప్పితే గంగకును.

[17] గోవుశంపిన పాపానభోదురు[ ]నుమనుఖవానుడనుకన

[18] వెచ్చెరటిచెరినయడదుర మందు[ ]మయవంచవశా.

[19] యుంవనుయుదునుమ[ ]ఖుహ.

REMARKS.

[1] వెచ్చె is possibly డ · చ·

[2] ఁ must be య·

[3] There is a break in ra thus ర

§ Is a half letter thus)

* Letter omitted, probably a man's name.

* * Year and date omitted,

There are 19 lines of inscription. All Dirghamus are made very large.

FIRST STONE.

BOTTOM.

[1] సంసమళ్వుబృదిపరయిన భృవంసంవత్సర.

[2] చయిత్రనుఖానుసమస్తనిజనామాదలయిన్వ గకిస్తిందవరగ[1]శ్రీ రిపరదివరది వులయిన.

[3] నందికనుమనడిచె ఆవులువుభయనాడు.

[4] వి అయ్యాదిమ్యాలము శృమయినసమస్తకం

[5] కందినువీరపరివారముం అఖండఆరవభద్రదివర మంత్రపమునయి.

[6] వజ్రకింపూస్యనామాలయి పూజ్భవయివ.

[7] మందవరబ్రాదివరకు యిచ్చినదంమశాశనం వీరభద్రుదివకు అమృతపది కిన్ని.

[8] అమరదందవయిభవాలకు ఆనుసరించిన వివరం నందికను.

[9] మనడిచెనానాధాన్యాల ప్రతియెద్దుకుఱుకం - ం.

[10] ఱుకు శానుతిబాసుదూదిచులవ పొంకలకురూక.

[11] మొకియ్యక రూకలు వినికి ప్రతికిరుక - ం.

[12] కిశాకు ఆచందకస్తాయిగానుయిచిమగ్రనచా.

[13] [2]ఎవంమాన్నపై వరగెనకతప్పినాను గంగకరతను గోవుసంపిన.

[14] పాపానశావ్యాస్మృతదతాజ్ఞ గుణపూజ కృంవరదపాను.

[15] హులనందరతతారశాకినా స్మదరంనిష్టలం బవినున.

[16] మంగపకుటాణోవదడామపరనుం[3]ఱుకిస్వరఆత్యంబరదండవల్లశాధ్యరవిమ.

[17] పాశాములకుమారుండు పానిమృంగారిఆనతిని పాశమల్లన్న.

[18] కుడడదంనిదికిన్న పరాజునుభద్రమల్లన్న.

[19] విన్నవముపాలించియెచ్రి దర్శశాసనము.

REMARKS.

(1) ශ්‍රී This letter is perhaps వు.

(2) ఎ letter must be య.

(3) ఱు is perhaps డ.

There are 19 lines of inscription. All Dirghamus are made very large.

SECOND STONE.

[1] దియితగానుద్దంచసాబ్బనరుచ.

[2] ఆంటూచూయ్యిబాం.

[3] తందుచడుగొబనాయనిచచిగ దిగానరంభుంరొద.

[4] చేశేదంనెయలకూలగాన [* * * * *] మిగానరగ.

[5] బాహానెపలదుంబసావ [* * * * *] యదవంద.

[6] చందకస్గానువ [* * * * *] చంసా.

[7] వంనులగ ఎదిదదం [* * * * * *] లనంనకదిస.

[8] ఎనపలంగ్గానందచి [* * * * * * *] ంయవను.

[9] నానుబ్రాహానిచవన [* * * * * * *] గంగక.

[10] లిగోవచంబన [* * * * * *] చొబగునె.

[11] న్యోరదతా [* * * * * * *] లస్గంద. జాలిం

[12] నిపపదడగానింగ [* * * * * * * * * *]

REMARKS.

The letters obliterated by the lascar grinding his curry-powder are shewn by asterisks. The following is the nearest approximation that could be made to decipher them :

4 [స్గం * నడ]

5 [నా * ను * ఏ]

6 [న * * * ప]

7 [* * * * చ *]

8 [ది * * దం * *]

9 [భది * నలచను]

10 [* రస్గన * *]

11 [రుచ * * * దయ]

12 [ధని * * * * * * * *]

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JANUARY, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd January, 1884, at 9 P. M.

The Hon'ble H. J. REYNOLDS, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Madras Government,—A Sketch of the Dynasties of Southern India, by R. Sewell.
2. From the Bengal Government,—Archæological Survey of India Reports, Vol. XVI.
3. From H. J. Scott, Esq.,—South Australia: its History, Productions and Natural Resources, by J. P. Stow.
4. From the Deutsche Morgenländische Gesellschaft,—Indische Studien, Vol. XVI.
5. From the Author,—The Máldive Islands, by H. C. P. Bell.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :

1. Dr. G. Bidie.
2. Babu Rai Sohun Lall.

The following gentleman is a candidate for election at the next meeting :

Major A. C. Bigg-Wither, proposed by F. E. Pargiter, Esq., C. S., seconded by T. D. Beighton, Esq., C. S.

The following gentlemen have intimated their desire to withdraw from the Society :

H. C. Levinge, Esq., C. E.
C. Robertson, Esq., C. S.
Dr. W. K. Waller.

The PRESIDENT stated that some doubts had been expressed whether the Rules of the Society permitted of the election of six special Centenary Honorary Members in addition to the normal number of 30 Honorary Members. The Council were, however, of opinion that, as the Centenary celebration was a special event not contemplated in the Rules, the special course recommended by the Council might be adopted, if approved at a General Meeting of the Society. He therefore asked the meeting to express its approval of the course proposed.

The proposal was unanimously approved. The President then announced that the Council recommended the following six gentlemen for election as Special Centenary Honorary Members for the reasons specified:

1. James Prescot Joule, LL. D., F. R. S., discoverer of the laws of the evolution of heat, of the induction of magnetism by electric currents, of the mechanical equivalent of heat, and the originator of the Kinetic Theory of Gases. He was presented by the Royal Society in 1850 with its medal, and in 1870 with the Copley medal, for his experimental researches on the dynamical theory of heat. He is in receipt of a Civil List pension in recognition of his eminent scientific achievements and valuable discoveries.

2. Professor Dr. Ernst Häckel, University of Jena, for his morphological and embryological discoveries, and his many valuable papers on the *Medusæ* and other forms of sea and fresh water animals.

3. Charles Meldrum, M. A., F. R. S., F. R. A. S, Port Louis, Mauritius, on account of his valuable researches into the meteorology of the Indian Ocean.

4. A. H. Sayce, Deputy Professor of Comparative Philology in the University of Oxford, on account of his distinguished services to Comparative Philology generally, and especially to the knowledge of the Assyrian, Accadian and Hittite languages.

5. E. Senart, Member of the Institute of France, on account of his distinguished services to Páli Scholarship, especially in the decipherment of the ancient inscriptions of Asoka, and in editing Páli and Gáthá texts.

6. Professor Monier Williams, Boden Professor of Sanskrit in the University of Oxford and founder of the Indian Institute in the same University, on account of his distinguished services to the interests, literary and social, of India, and his valuable grammatical and lexicographic contributions to Sanskrit Philology.

The PRESIDENT also announced that the Special Centenary meeting, at which these gentlemen would be elected Honorary Members, and the Review of the Society's Researches during the Century of its existence would be presented to the Society, would be held on the 15th January at 7-30 P. M., and would be followed by the Centenary Dinner, at which H. E. the Viceroy had kindly consented to be present, at 8 P. M.

The following coins have been acquired under the Treasure Trove Act:

8 silver coins of Menander from the Commissioner and Superintendent, Amritsar Division.

The SECRETARY read a letter from Mr. W. A. Holwell of Quebec, thanking the Society for presenting him with the numbers of the Journal and Proceedings containing an account of Mr. Bayne's excavations on the site of Old Fort William, of which the following is an extract:

"I have some fine old portraits (believed to be by Reynolds) of 'The Governor' and family; one of them is a full length portrait of my honoured ancestor, superintending the building of the monument erected by him at Calcutta, to commemorate the catastrophe of 20th June, 1756, with a view of 'Fort William' in the distance. I have also one of his mother Sarah Holwell, who was burned in her bed at the age of 102! I have also the *original* 'Grant of Arms' (dated 7th December 1762) to Governor Holwell, in which the ancient family crest (a Goat) is replaced by a 'demi-man, representing Suraja Dowla &c.'"

The PRESIDENT stated that a letter would be written to Mr. Holwell asking him to oblige the Society by obtaining a photograph of the portrait of Governor Holwell referred to.

The PHILOLOGICAL SECRETARY read the following note by Mr. V. A. Smith on the Nandinágarí character.

"The South Indian form of the Nágarí character, as current in modern times, usually goes by the name of Nandinágarí, a name which is quite as difficult to account for as Devanágarí. The Nandinágarí is directly derived from the North Indian Devanágarí of about the eleventh century, but it is from the type that prevailed at Benares and in the west, and not from the Gauṛí or Bengálí.*

"It occurs to me that the name of this character may be derived from that of the city Nandinagara on the Godaverí, whlch is mentioned in many of the Sánchi dedicatory inscriptions, and which seems to be the same as the modern Nander, and the Nándigera of the Bombay cave inscriptions.†

"This explanation is admittedly no more than a guess, but it has at least a plausible appearance."

* Burnell, Elements of S. Indian Palæography, 2nd edition, p. 52.

† Cunningham, Arch. Reports, Vol. X, p. 59, with reference to Journal, Bomb. Br. R. A. S. Vol. V, p. 53.

Mr. F. E. PARGITER remarked, that the proposed derivation would, according to the rules of Sanskrit Grammar, require the form *nándinagarí*, instead of *nandinágarí*.

Dr. HOERNLE added that the word occurring in the Bombay cave inscriptions is not *nandigera*, the name of a town, but *nálígera*, 'a cocoanut tree' (see *Indian Antiquary*, Vol. XII, p. 27).

The following papers were read—

1. *Some coins of Ranjit Deo, King of Jummú a hundred years ago.*—*By* CHARLES J. RODGERS, *Principal, Normal College, Amritsar.*

(Abstract.)

In the first year of the present century Ranjit Singh, "the Lion of the Panjáb," conquered Lahor. For many years after that event he was constantly engaged in subduing the whole of the cities and states of the Panjáb, and his name and fame seem to have altogether hidden the name of a better man, who bore the name of Ranjit Deo and who ruled in the hill state of Jummú or Jummún. Mr. C. J. Rodgers gives extracts from various historical works regarding Ranjit Deo, showing that he was a wise administrator and a just judge. The time in which he lived was one of utter lawlessness, but yet his little state was the abode of peace and safety, and his capital received the name of "Dár ul Amán", *i. e.*, the "Gate of Safety." Mr. Rodgers has been able to obtain only 4 coins which can be ascribed to Ranjit Deo. The first was struck at Jummú in the name of Sháh Álam II, the blind king of Dehli, and is dated 1196 A. H., the 24th year of Sháh Álam's reign. Shortly after, in the 27th year of Sháh Álam's reign, Mr. Rodgers finds that Ranjít Deo began striking coins in Jummú in his own name. On these coins he uses the Sambat year, but, strange to say, still retains the year of the reign of Sháh Álam, and he places on his coins the symbol of imperial power—the umbrella, so frequently occurring on the coins of that Suzerain.

This paper will be published in full in the Journal, Part I.

2. *A peculiar atmospheric phenomenon observed on several days after sunset and before sunrise in the Panjab.*—*By* J. BRIDGES LEE, M. A., *Barr.-at-law*, F.G.S., F.Z.S., F.C.S., &c.

Most people in Lahore, and also probably in the neighbouring districts of the Punjab, have had their attention arrested by the very beautiful evening glow which has lately filled the western sky at sunset and shortly after. The glow has been noticeable for several days past and was especially beautiful on Sunday last. The whole western sky has been seen to be full of light, the tints varying from green through yellow, orange and red. These tints have succeeded each other in the order of the colours of the spectrum, though the colours are not pure in the sense

that the colours seen through a spectroscope are pure. The remarkable circumstance about the phenomenon is that the more refrangible tints were visible nearest to the horizon and the less refrangible tints above.

No explanation has, I believe, ever been offered to account for this peculiar atmospheric phenomenon, and, so far as I am aware, the phenomenon itself has not been noticed in any standard work of science. The very beautiful orange and golden sunsets which are so common during the rainy season have of course often been noticed, and the explanation commonly offered is simple and satisfactory. The chief facts noticeable about a rosy sunset are that the atmosphere is charged with moisture, and the deeper and less refrangible colours are found nearest to the horizon. All other tints may be visible at various angular elevations and all shades of colour, which are often beautiful beyond description, are reflected from and transmitted by the clouds which commonly accompany such a sunset. The colours are known to be due to the presence of aqueous vapour and of very tiny globules of water diffused through and suspended in the atmosphere. Violet waves which have the smallest amplitude are first arrested and partly quenched and partly diffused. Afterwards, indigo, blue, green, yellow, orange and red in the reverse order of the spectrum. All are arrested and scattered more or less, but the most refrangible rays are relatively most affected, while the longer and larger waves force their way through. It follows that where the sun's rays have had to pass through the densest masses of vapour-charged atmosphere the least refrangible rays will preponderate. The layer nearest to the earth will generally be most densely charged, and will present the greatest thickness of air for the sun's rays to traverse, and the sun itself and the western horizon will often appear of a deep blood-red colour. Higher up the colours will be orange and yellow, or, if the atmosphere is not highly charged, the horizon itself may appear orange or yellow, from the fact that the yellow and orange rays are abundant, and the yellow rays which lie nearest to the centre of the visible spectrum affect our eyes more powerfully than the less refrangible red which lies near the lower limits of visual sensation. Other tints which are visible on such occasions are due to the bandying about of variously tinted light from cloud to cloud and the various effects of dispersion, absorption and refraction. These remarks, however, all refer to the well known appearances which always accompany a fine sunset in the rainy season, and they are only referred to for the purpose of drawing attention to the chief points of difference between such a sunset and such a glow as we have lately seen in the western sky. A different explanation is needed for what is quite a different phenomenon, and I would suggest that the true explanation may perhaps be elicited from a consideration of the different circumstances

under which the phenomenon appears. First, it may be noticed that for a succession of days we have had an absolutely unclouded sky. Secondly, there has not been for some days a breath of wind to stir the atmosphere. Now during all this time steady evaporation has been going on from the surface of the plains and the aqueous vapour in obedience to the ordinary laws of gaseous diffusion has been steadily diffusing upwards through the atmosphere, so that the state of relative saturation of the upper layers of the atmosphere has been steadily approaching the state of saturation of the layers immediately below. Now, in this condition of affairs, when the sun dips towards the western horizon, and the cooling effects of radiation commence to preponderate over the heating effects of the sun's rays, the upper strata of aqueous vapour will be cooled to the condensation point before the lower layers. The reasons why this should be so will be clear to any person who has sufficiently considered the laws of radiation and selective absorption. The layer in immediate contact with the earth will form the only exception to the general rule, which otherwise will apply to the whole thickness of the atmosphere. The earth as a solid body radiates heat of every degree of refrangibility within a very wide range, the upper limit of which appears to stop short of the visible spectrum. Aqueous vapour, as well as the gases and vapours which mixed together form the atmosphere, exercise selective absorption as to certain portions of this radiant energy which chance to synchronise with the several vibratory periods of their several molecules, but the remaining vibrations all pass freely through the air which is for them a perfectly diathermanous medium. It follows that the outer and exposed surfaces of the earth get rapidly cooled by radiation, and the layers of air in immediate contact with such surfaces get cooled by conduction. If the surfaces of contact are below the temperature of condensation which corresponds with the then hygrometric state of the atmosphere in immediate proximity to those surfaces, dew is deposited and subseqnently fresh vapour diffuses downwards, and is in its turn condensed and so on. These observations apply only to layers in the immediate neighbourhood of the earth. At greater heights the conditions are quite different. There all heat vibrations radiated from water surfaces and all radiated vibrations from solid surfaces which synchronise with the vibratory periods of the molecules of water will be arrested by those molecules and the effect will be to tend to maintain them in the gaseous state. This effect will be progressive and will be greatest at lower levels and least at higher levels. Now besides the radiation from the earth which we have been considering there is radiation from the atmosphere and from every particle in it. Radiation from the upper layers is least checked by selective absorption and the upper layers are also least heated by radiant energy from below, so that

they will be the most rapidly cooled, and the first condensation of water to form fine mist of watery globules or ice crystals, will be there. This condensation of the uppermost layers once commenced will continue, and the tiny globules or crystals will grow in dimensions and in number, while at the same time condensation will be proceeding in a downward direction through successive layers of the atmosphere. Now if this theoretical account of what should occur in a still and cloudless atmosphere represents what actually does occur, the explanation of the phenomenon which we started by describing is not far to seek and is in perfect accordance with the ordinary explanation of a rosy sunset. The rays which reach the eye after travelling mostly through the lower layers of the atmosphere will have lost least by absorption or diffusion, and the loss of violet, blue and green will become greater in proportion as more of the upper layers are traversed before the light reaches our eyes. The lowermost limit which I observed last Sunday was, as above stated, green. The green was a yellow green and shaded off into bright yellow. I am inclined to think that the greenish tinge was due to the blue background of the sky; which was in fact visible through the yellow haze. Higher up there would appear to have been a denser glare and the blue background would appear to have been completely obscured. Above that the yellow shaded off through orange into red, which gradually faded off through purple towards the dark blue of the sky. The purple I consider also to be due to the fact that the blue sky was partially visible through the faint peripheral red.

Postscript.

The above observations were written in the first week of November when the phenomenon was particularly well marked. Since then the same appearance has been observed several times apparently over wide areas and many letters have been written to the newspapers referring to the peculiar after-glow and advancing various theories, some of them very wild and farfetched. Especially was it suggested that the phenomenon might be connected with volcanic dust supposed to have been distributed with marvellous uniformity through the upper layers of the atmosphere, and over tens of thousands of square miles of superficial area. Without going the length of suggesting that such an explanation must, in the particular instances referred to, be necessarily unsound or incorrect, I would urge that the explanation above given is more rational and more simple. We know of course that there are authentic instances on record where volcanic dust has been distinctly traced to a distance of some hundreds of miles from a centre of volcanic eruption, but in such cases well-marked air-currents have had much to say to the distribution, and anything like a uniform distribution of dust through the atmosphere a thou-

sand or two miles from the centre of eruption is at least improbable, and we may well require some specific confirmation of such a theory. I observed with particular care that during the continuance of the phenomenon in these parts there was not a breath of wind stirring. So soon as wind came, the exceptional appearance vanished, and gave place to the ordinary well known after-glow where the deeper tints were nearest to the horizon; this appearance is common always in the cold weather, and it is seen best at times when the atmosphere is most free from dust, *i. e.*, shortly after the cessation of the rains. Naturally any agitation of the atmosphere would tend to disturb such a state of distribution as would result from complete quiescence under the influence of steady upward diffusion of vapour and uniform radiation through a uniformly unclouded atmosphere. A reference to the Meteorological Reports of the time will, I believe, show that there was a complete absence of cloud and wind over very extensive areas, and the laws of radiation, selective absorption, diffusion and condensation of vapour tell us that, under such conditions, progressive condensation of vapour, beginning in the higher layers of the atmosphere and extending gradually downwards, should happen. Our knowledge also of the effects of diffused cloud composed of particles whose diameters are comparable to the amplitudes of light vibrations tells us that if the distribution of water-particles was in fact what well-established theory showed it should be, then the light effects observed were those which experience and equally sound theory would dictate.

LIBRARY.

The following additions have been made to the Library since the Meeting held in December last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 3.
Baltimore. American Chemical Journal,—Vol. V, No. 5.
Berlin. Entomologische Zeitschrift,—Vol. XXVII, No. 2.
Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 22.
Calcutta. Indian Meteorological Memoirs,—Vol. II, Part 2.
———. United Service Institution of India,—Journal, Vol. XII, No. 57.

Colombo. Ceylon Branch of the Royal Asiatic Society,—Journal, 1882.
———. ———. Proceedings, 1882.
Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. III, Nos 50-52.
London. Academy,—Nos. 603-605.
———. Athenæum,—Nos. 2926 and 2928.
———. Institution of Civil Engineers,—Minutes and Proceedings, Vol. LXXIV.
———. ———. ———. Subject Index, Vols. LIX-LXXIV
———. Institution of Mechanical Engineers,—Proceedings, No. 3, July, 1883.
———. Nature,—Vol. XXIX, Nos. 734-736.
———. Royal Asiatic Society,—Journal, Vol. XV, Part 4, October, 1883.
———. Royal Geographical Society,—Proceedings, Vol. V, No. 2, November, 1883.
———. Statistical Society,—Journal, Vol. XLVI, Part 3, September, 1883.
Paris. Revue Politique et Littéraire,—Vol. XXXII, No. 23.
——. Société de Géographie,—Compte rendu des séances, Nos. 15-16.
St. Petersburg. Russian Geographical Society,—Isvestiya, Vol. XIX, No. 3.
Vienna. Ornithologischer Verein,—Mittheilungen, Vol. VII, No. 2.
Zagreb. Arkeologickoga Druztva,—Viestnik, Vol. V, No. 4.

Pamphlet,

presented by the Author.

Bell, H. C. P. The Máldive Islands: an account of the Physical Features, Climate, History, Inhabitants, Productions, and Trade. Fcp. Colombo, 1883.

Miscellaneous Presentations.

Archæological Survey of India Reports, Vol. XVI. 8vo. Calcutta, 1883.
Annual Report on Emigration from the Port of Calcutta to British and Foreign Colonies for 1882-83. Fcp. Calcutta, 1883.
Report on the Administration of the Salt Department for the year 1882-83. Fcp. Calcutta, 1883.
Indian Forester,—Vol. IX, No. 11, November, 1883.

Bengal Government.

Indische Studien, Vol. XVI, 8vo. Leipzig, 1883.

Deut. Morgenlandische Gesellschaft.

Annual Report on the Civil Hospitals and Dispensaries in the Madras Presidency for the year 1882. Fcp. Madras, 1883.

SEWELL, ROBERT. A Sketch of the Dynasties of Southern India. 4to. Madras, 1883.

MADRAS GOVERNMENT.

STOW, J. P. South Australia, its History, Productions, and Natural Resources, written for the Calcutta Exhibition. 8vo. Adelaide, 1883.

H. J. SCOTT, ESQ.

PERIODICALS PURCHASED.

Berlin. Deutsche Litteraturzeitung,—Vol. IV, Nos. 40, 42-44.

Cassel. Botanisches Centralblatt,—Vol. XVI, Nos 3-5.

Göttingen. Gelehrte Anzeigen,—Nos. 46-48.

———. Nachrichten,—Nos. 11-12.

Leipzig. Hesperos,—Vol. III, Nos. 59-60.

———. Literarisches Centralblatt,—Nos. 43-45.

London. Annals and Magazine of Natural History,—Vol. XII, No. 71, November, 1883.

———. Chemical News,—Vol. XLVIII, Nos. 1252-1254.

———. Entomologist,—Vol. XVI, No. 246, November, 1883.

———. Entomologists' Monthly Magazine,—Vol. XX, No. 234, November, 1883.

———. Ibis,—Vol. I, No. 4, October, 1883.

———. Journal of Botany,—Vol. XXI, No. 251, November, 1883.

———. Journal of Science,—Vol. V, No. 119, November, 1883.

———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XVI, No. 101, November, 1883.

———. Messenger of Mathematics,—Vol. XIII, No. 5, September, 1883.

———. Nineteenth Century,—Vol. XIV, No. 81, November, 1883.

———. Publishers' Circular,—Vol. XLVI, No. 1108.

———. Quarterly Journal of Microscopical Science,—Vol. XXIII, No. 92, October, 1883.

———. Society of Arts,—Journal, Vol. XXXII, Nos. 1618-1620.

Paris. Comptes Rendus,—Vol. XCVII, Nos. 20-22.

——. Revue Critique,—Vol. XVI, Nos. 47 and 49.

——. Revue des deux Mondes,—Vol. LX, No. 3.

——. Revue Scientifique,—Vol. XXXII, Nos. 21-23.

BOOKS PURCHASED.

FAUSBÖLL, V. The Jātaka together with its Commentary. Edited. Vol. III. 8vo. London, 1883.

GODWIN-AUSTEN'S Land and Fresh Water Mollusca of India. Text, Part IV. 4to. London, 1883.

MEYER, GEORG HERMANN VON. The Organs of Speech and their application in the formation of articulate sounds. 12mo. London, 1883.

The Encyclopædia Britannica. Vol. XVI. 4to. Edinburgh, 1883.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR FEBRUARY, 1884.

The Annual Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th February 1884, at 9 P. M.

The HON'BLE H. J. REYNOLDS, President, in the Chair.

According to the Bye-Laws of the Society, the President ordered the voting papers to be distributed for the election of Officers and Members of Council for 1884; and appointed Mr. E. F. T. Atkinson and Babu Adhar Lal Sen, Scrutineers.

The PRESIDENT then called upon the SECRETARY to read the Annual Report.

ANNUAL REPORT FOR 1883.

The Council of the Asiatic Society have the honour to submit the following Report on the Society's affairs for 1883, the hundredth year of its existence.

During the year under review, 18 gentlemen were elected Ordinary Members, 19 Members withdrew, 3 died, 7 were removed from the list of Members in accordance with Rule 40 and 2 in accordance with Rule 38. Mr. W. T. Blanford was elected an Honorary Member on the 7th February, so that his name was removed from the list of Ordinary Members from that date. There was thus a net loss of 14 Ordinary Members during the year, the number at the close of the year being 323, as against 337 at the end of 1882.

The following table shows the fluctuations in the number of Ordinary Members for the past 6 years.

YEAR.	PAYING.				NON-PAYING.			GRAND TOTAL.
	Resident.	Non-resident.	Foreign.	Total.	Life.	Absent.	Total.	
1878	117	153	15	285	13	29	42	327
1879	111	154	16	281	12	36	48	329
1880	112	185	15	312	14	30	44	356
1881	110	168	17	295	14	41	55	350
1882	101	155	18	274	15	48	63	337
1883	100	142	18	260	15	48	63	323

It will be seen from this table that, of the 323 Members on the 31st December 1883, 100 are Resident, 142 Non-Resident, 18 Foreign, 15 Life, and 48 Non-Subscribing Members. During the year one Member, Dr. D. Brandis, compounded for his future subscriptions, but as another Life Member, Mr. W. T. Blanford, was elected an Honorary Member, the total number of Life Members remains the same as it was at the close of 1882.

At the beginning of the year, there were 3 vacancies in the list of Honorary Members, and the following gentlemen were accordingly elected Honorary Members on the 7th February :—Messrs. W. T. Blanford, A. R. S. M., F. R. S., F. G. S., F. R. G. S., A. R. Wallace, F. L. S., F. R. G. S., and Professor W. D. Whitney. Mr. C. J. Rodgers was elected an Associate Member on the 7th February.

The Society has lost one of its most active Associate Members during the year by the murder of Mr. F. A. de Roepstorff, Superintendent in Camorta Island. Mr. de Roepstorff had contributed to the Society many valuable papers on the ethnology of the Andaman and Nicobar Islands, amongst which may be mentioned three papers entitled "Notes on the Inhabitants of the Nicobars," and "Tiomberombi: a Nicobarese Tale. A translation."

The 3 Ordinary Members who died during the year were Raja Pramathanatha Rai, Mr. T. W. H. Tolbort and Captain W. J. Williamson.

Indian Museum.

The Hon. H. J. Reynolds, Dr. A. F. R. Hoernle, Major J. Waterhouse, and Dr. H. W. M'Cann have continued to act as Trustees of the Museum on behalf of the Society during the year. Mr. J. Eliot resigned his post of Trustee on his departure for Europe in July.

The following presentations were made to the Museum under the provisions of Section 12 of Act XXII of 1876:

(1). A stone slab with inscription from the ruins of the Old Fort of Deogarh, presented by Mr. F. C. Black;

(2). A brass casting of the arms of the old East India Company found in a temple at Faizabad, presented by Mr. T. A. M. Gennoe;

(3). Specimens of pottery, stone implements &c., from Er-Lannig, and photographs of the Dolmen de Korchqueus, the Menhir de Locmana-guer and of part of the Standing Stone of Carnac, Er-Lannig, presented by Mr. H. Rivett-Carnac.

Finance.

The accounts of the Asiatic Society are shown in the Appendix classified under the usual heads. Statement No. 8 contains the Balance Sheet of the Asiatic Society, as also of the different Funds administered through it.

The budget for the past year was estimated at the following:—Receipts Rs. 16,198; Expenditure Rs. 15,475.

The actuals were found to be:—Receipts Rs. 15,579; Expenditure Rs. 15,646.

The falling off in the receipts is due to short receipts from Sales of Periodicals, which were estimated at Rs. 1000, and produced only Rs. 628. The receipts from Subscriptions also fell short of the estimate by Rs. 187.

On the other side of the account, an excess expenditure of Rs. 928 on Books was partly balanced by savings under the heads of Salaries, Building and Journal, Part II. The saving in Salaries is due to a new Assistant Librarian having been appointed about the middle of the year on the minimum pay of the post, and, as his predecessor drew the maximum, the difference accounts for the decrease. Journal, Part II, shows a saving as only one number was issued.

The increase in expenditure is found under the following items: Books, Coins and Journal, Part I. The budget allowance under the heading "Books" was Rs. 2000. Measures have been taken to regulate the expenditure under this head more carefully in future. Although the actual amount expended on Coins showed an excess of Rs. 213, against this a sum of Rs. 177 for sale of old coins was realized. The excess under this head would therefore be reduced to Rs. 36. An extra number of Journal, Part I, was issued during the past year and hence the increase over the estimated expenditure.

On the whole, whilst the actual receipts fall short of the estimate by Rs. 619, the expenditure exceeded the estimate by Rs. 171. The excess of actual expenditure over actual receipts was only Rs. 67.

The following is the estimate of income and expenditure for the year 1884:—

RECEIPTS.

Subscriptions	Rs.	8,000
Sale of periodicals		1,150
Interest on investment		6,200
Miscellaneous		375
	Rs.	15,725

EXPENDITURE.

Salaries	Rs.	4,430
Commission		350
Pension		51
Stationery...		200
Lighting		80
Building		1,030
Taxes		720
Postage		700
Freight		30
Meetings		80
Contingencies		300
Books		1,450
Local Periodicals		58
Binding		350
Coins		100
Journal, Part I		2,100
Journal, Part II		2,100
Proceedings		1,100
Printing of Circulars &c.		200
	Rs.	15,429

To the expenditure must be added the cost of printing and binding the Centenary Review, which may be taken at Rs. 3,200.

Should the catalogue, which has been almost completed, be printed and bound during the year, the estimate for such work might be computed at Rs. 1,625. These two items of expenditure will be met by selling out, if necessary, a part of the Reserve Fund.

London Agency.

The Statement furnished by Messrs. Trübner and Co. of their account with the Society for the year 1882 showed a balance in their favour of £158-13-5½.

The sales of the Society's publications effected by Messrs. Trübner and Co. amounted to £46-16-1½ and of the Bibliotheca Indica, to £16-12-6. A protracted correspondence took place with Messrs. Trübner and Co. regarding the correctness of some of the items in their Statement of account, and, owing to the delay thus occasioned, the balance due to them could not be paid till the beginning of the present year.

Twenty Invoices of books purchased and of publications of various Societies sent in exchange were received during the year 1883. The money value of the books purchased amounted to £109-7-3.

The number of copies of parts of the Journal, Proceedings and Bibliotheca Indica sent to Messrs. Trübner and Co. for sale, was 531, 318, and 418 respectively.

Library.

The total number of volumes or parts of volumes added to the Library in 1883 was 2,100, of which 864 were purchased and 1,236 presented or received in exchange for the Society's publications.

Unforeseen difficulties have again arisen to interfere with the speedy publication of the Library Catalogue. It has once more been found necessary to withdraw the work from the Press to which it had been entrusted, owing to the unsatisfactory and irregular manner in which it was being carried out. The Catalogue is now in the hands of the City Press, and is in type as far as the letter M, and the Council have every reason to hope that the vexatious series of accidents and misadventures which have so long delayed its issue are at an end.

Publications.

Four Nos. of the Journal, Part I, and one of Part II, were published during the year, containing 288 and 88 pages of letter press and 23 and 8 plates respectively. Ten Nos. of the Proceedings containing 188 pages of letter press and 6 plates were also published. The number of publications is less than usual as the time of the Society's Officers and Staff has been largely taken up in the preparation of the Centenary Review of the Researches of the Society, which will fall for notice under the next Annual Report.

A new edition of the Society's Bye-Laws has been issued, corrected up to the 1st July 1883.

Building.

The total amount spent on the Building during the year was Rs. 65-8. Towards the close of the year, the exterior of the Society's premises was thoroughly repaired for the first time since 1876, and extensive repairs were also executed in the outhouses, at a cost of Rs. 930. This amount will have to be provided for in next year's budget.

Coin Cabinet.

Large additions were made during the past year. Among them, 168 coins were purchased, the remainder being presentations.

Among the purchased coins are 31 Rupees of the Bengal Sultans Ilyás Sháh and Sikandar Sháh of various mintages, found in the villages of Bir Gopalpur and Nasipur, Pargana Ambar, subdivision Pakour, Sonthal Parganas; 44 copper coins of the Dehli Sultan Firuz Shah II, found at Fatehgaṛh, in the Furrukhabad District, N.-W. Prov.: 6 gold Gupta coins, found in Madhubpore, Thana Jehannabad, District of Hooghly; 39 Rupees of various types of the Bengal Sultans Náṣiru-d-dín Maḥmúd Sháh I and Ruknu-d-dín Bárbak Shah, found near Daulatpur, in Thana Dewan Serai, Murshidabad District; 3 Rupees of Sháh Ghází, found at Hájípur, Muzaffarpur District; 5 Rupees, of various types, of Shahjehán and Jehángír found on the banks of the river Dwarikeśwar near Pithaipur, Thana Bishenpur, District Bankúrá; 11 Rupees of Alá-ud-din Muhammad Sháh of Delhi and of Táj-ud-din Firoz Sháh of the Bahmaní Dynasty, found in the fields of Mouzah Karinjá, Lanjí Pergana, District Balaghat, Nagpur Division; 6 Rupees of Muhammad Sháh and Aurangzib, mint Bijapur, Surat and Golkunda, found in the Raipur District, Chattisgaṛh Division; 15 Rupees of Akbar and Shahjehán, found in the Allahabad District; 6 Hemidrachmas of Menander, of four different types (*viz.* 3 of No. 14, 2 of No. 15, and 1 of No. 16, Ariana Ant. Plate III), also 2 Hemidrachmas of Antimachus (type No. 11 in Ariana Ant., Plate II), all found in the Amritsar District.

Among the presentations there was a large collection of Buddhist copper coins, found near Tumlook, and presented by the Tumlook Public Library; one Indo-Sassanian coin from Munshi Debi Pershad; and 4 Varáha coins, from the Collector of Bahraich.

Secretary's Office.

Dr. A. F. R. Hoernle and Dr. H. W. M'Cann have continued to act as Philological Secretary and General Secretary throughout the year. Mr. J. Eliot resigned the Treasurership in July and was succeeded by Mr. F. W. Peterson. Dr. J. Scully left Calcutta in February and Babu P. N. Bose was in June appointed Natural History Secretary in his place. Babu P. N. Bose was succeeded by Mr. L. de Nicéville in October.

Mr. W. A. Bion has continued to hold the post of Assistant Secretary and Babu Nritya Gopal Basu that of Cashier throughout the year. Mr. E. S. Andrews resigned the Assistant Librarianship in May and Mr. A. S. Tiery was appointed in his place. Mr. Tiery held the post till the

end of July, when he too resigned, and Mr. J. H. Elliott was appointed. Babu Amrita Lall Das succeeded Babu Mohendra Chunder Mukerji as copyist in May.

Bibliotheca Indica.

Eighteen fasciculi were published during the year, fifteen in the Sanskrit and three in the Arabic-Persian series. They belong to ten different works, of which one is in the Arabic-Persian and nine are in the Sanskrit series. Among the latter there are three new publications, *viz.*, the *Parásara Smṛiti*, the *Susruta* and the *Sthavírávalícharita;* and one among them, the *Pátanjala Yoga Sútra* has been completed. All these publications, with the exception of the *Susruta* and the *Pátanjala Yoga Sútra*, are text editions. Of the *Pátanjala Yoga Sútra* both text and translation have been published *pari passu.*

A. *Arabic-Persian Series.*

1. Of the Iṣábah or Biographical Dictionary of persons who knew Muḥammad, by Ibn Hajar, three fasciculi have been published by Maulvi 'Abdul Hai. This is a voluminous work of which manuscripts are only with great difficulty procurable. When the work, in 1853, was commenced, no complete manuscripts appear to have existed, and in 1856 it was dropped in the middle of the second volume for want of them. This portion of the work, *i. e.*, the first volume, completed in 1856, and part of the second volume, was edited by the three Maulvis, Muhammad Wajíh, 'Abdu'l Haqq and Gholám Qádir. In 1864 it was determined to complete the dictionary as far as possible, and the fourth volume was published by Maulvi 'Abdul Hai, who finished it in 1873. In that year, unexpectedly, three manuscripts of the second and third volumes turned up in the possession of Maulvi Kabíruddín Ahmad. These are now being published by Maulvi Abdul Hai, and there is every hope that this important work will soon be completed. Of the three fasciculi published during the year under review, two belong to the second, and one to the third volume. Of the whole work, therefore, the Society has issued volumes I and II, complete, and of volumes III and IV, seven and five fasciculi respectively. The first volume comes down to the end of ر *re*, giving biographical notices of 2759 'male witnesses;' the seventh fasciculus of the second volume to the beginning of ع *'ayin* ('Abdullah), bringing down the notices to the 8939th "male witness." The third volume, commencing with the middle of ع ('Amrú) and with new serial numbers, carries the notices down to nearly the end of ق *Kof* (Qanán) and contains 1249 "male witnesses." The fourth volume forms a dis-

tinct part of the whole, containing notices of 1254 'male witnesses' whose names commence with the word *abú*, and of 1543 'female witnesses' of the prophet.

B. *Sanskrit Series.*

2. Dr. Rájendralála Mitra has advanced his edition of the text of the VÁYU PURÁṆA by two fasciculi. The work has now progressed to the fourth fasciculus of the second volume.

3. The same editor has published two fasciculi of his text and translation of the PÁTANJALA YOGA SÚTRA. This work was first undertaken in 1871, when a few pages were printed. It was then dropped for want of time, and again taken up in 1880. It has now been completed. The text is accompanied by the commentary of Bhoja Rája, and an English translation of both the text and commentary; also by an English commentary compiled by the editor himself, including short extracts from the commentaries of Vyása, Vijñána Bhikshu, and Váchaspati Miśra.

4. Of the third volume (containing the fifth Khaṇḍa) of Hemádri's CHATURVARGA CHINTÁMANI three fasciculi have been published by the joint-editors, Pandits Yogeśvara Smṛitiratna and Kámákhyánátha Tarkaratna. This work, though now known by the name of its patron, is generally ascribed to the celebrated grammarian Vopadeva. It is a very voluminous work, consisting of five parts (*khaṇḍa*), which treat severally of fasts and penances (*vrata*), gifts (*dána*), times (*kála*), funeral ceremonies (*śráddha*), and supplementary matters (*pariśesha*). Manuscripts of it are very rare; of the complete work no manuscript has yet been discovered. Fortunately the several portions of the work are practically independent of one another; and as the work is particularly valuable, because of the help it gives to the settlement of the dates of many treatises on Hindu law, and the light it throws on the state of Hindu society at the time when it was compiled and for some time previously, the Society resolved to proceed at once to the publication of those parts of the work of which manuscripts were already available, in the hope that by the time these were published, manuscripts of the remaining portions might be discovered. This hope has only partially been fulfilled. When the publication commenced in 1871, the only part of which sufficient manuscript material was at hand, was the second, treating of 'gifts' (or dánas); and the edition of this portion was entrusted to Pandit Bharata Chandra S'iromaṇi, who added an alphabetical index of the contents, as also of the names of the different authors quoted in the text. In the meanwhile sufficient manuscripts of the first part, on 'fasts and penances' (or vratas), had been procured; and the edition of this portion

was begun by the same editor in 1875, and, after his death, continued by the Pandits Yogeśvara Bhaṭṭáchárya and Kámákhyánátha Tarkaratna. Soon after this portion was completed, sufficient manuscripts were found to be ready to proceed to the publication of the fifth or supplementary part (or pariśesha khaṇḍa), which was done in 1881 by the joint editors of the previous portion. Of this part six fasciculi are now published. Of the fourth part, on the funeral ceremonies (or śráddha), there are already three manuscripts available; but of the fifth part, the Kála Khaṇḍa, there are still none known that are complete.

5. Pandit Satyavrata Sámaśramí commenced the second volume of his edition of the NIRUKTA, the well known glossarial explanation of obscure Vedic terms. The first fasciculus of this part has been published. The text is accompanied with extracts from various commentaries.

6. Professor R. Garbe, of Königsberg, has also commenced the second volume of his edition of the ÁPASTAMBA S'RAUTA SÚTRA. This is a very rare and important ritual work, belonging to the Black Yajur Veda, of which, for a long time, till Dr. Burnell's successful researches in South India, no complete manuscripts were available. To the text is added Rudradatta's commentary which, however, unfortunately does not extend to more than about two-thirds of the Sútra, that is, the fifteenth section or *praśna*. Two fasciculi of the second volume have been published.

7. Of the *Prithíráj Rásau*, the celebrated old Hindí epic of Chand Bardáí, narrating the family history and personal exploits of Prithíráj, the last Hindí ruler of Dehli, one fasciculus has been published by Dr. A. F. Rudolf Hoernle.

Three of the works, the forthcoming publication of which was announced in the annual report of last year, were commenced during the year under review. These are

8. An annotated English Translation of the SUŚRUTA SAMHITÁ, which, next to the Charaka, is the most important of the ancient Hindí medical works. The first two fasciculi of this work have been published by Dr. U. C. Dutt, Civil Surgeon of Serampore.

9. The PARIŚISHṬA PARVAN or STHAVIRÁVALÍ CHARITRA by Hemachandra, a Jain work in Sanskrit verse on the history of the first twelve Sthaviras or Patriarchs from the death of Mahávíra down to the last Srutakevalin. The first fasciculus has been published by Professor H. Jacobi of Münster.

10. The PARÁSARA SMṚITI, accompanied with Mádhava's Commentary. The first fasciculus has been published by Pandit Chandrakánta Tarkálankára.

The following works are in a more or less forward state of publication :—

1, ṬABAQÁT-I-NÁṢIRÍ (Index of persons and places); 2, AKBARNÁMAH (Text, IIIrd Vol.); 3, LALITA VISTARA (Translation); 4, KATHÁSARIT SÁGARA (Translation, IInd Vol.); 5, PRÁKṚITA LAKSHAṆA (Translation and Notes); 6, PRITHÍRÁJ RÁSAU (Translation); 7, KATANTRA (Introduction); 8, MUNTAḴHAB-UT-TAWARÍḴH (Translation); 9, BṚIHAD-DEVATÁ (Text); 10, PRÁKṚITÁDHYÁYA (Text and Translation); 11, CHARAKA (Translation with Notes); 12, NAQÁID (Text); 13, LÁMÍYYET-EL-ARAB (Text and Translation).

The following is a detailed list of the publications issued during 1883:—

Arabic-Persian Series.

1. IṢÁBAH, edited by Maulvi 'Abdul Hai, of the Calcutta Madrasa, Nos. 246, 247, 248 (old series, fasc. XXII, XXIII, XXIV, Vol. II, Nos. 6, 7 and Vol. III, No. 5).

Sanskrit Series.

2. VÁYU PURÁṆAM, a system of Hindú Mythology and tradition, edited by Dr. Rájendralála Mitra, C. I. E.; Nos. 488, 499; Vol. II, Fasc. III, IV.

3. PÁTANJALA YOGA SÚTRA, or the Yoga aphorisms of Patanjali, with the commentary of Bhoja Rája, and an English Translation, by Dr. Rájendralála Mitra, C. I. E., Nos. 491, 492, Fasc. IV, V (double number).

4. CHATURVARGA CHINTÁMAṆI, by Hemádri, edited by Pandits Yogeśvara Smṛitiratna and Kámákhyánátha Tarkaratna, Nos. 486, 493, 495, Vol. III, Part I, Fasc. IV-VI.

5. NIRUKTA, with Commentaries, edited by Pandit Satyavrata Sámaśramí; No. 494; Vol. II, Fasc. I.

6. ÁPASTAMBA S'RAUTA SÚTRA, belonging to the Black Yajurveda, with the commentary of Rudradatta, edited by Dr. Richard Garbe, Professor of Sanskrit, Königsberg; Nos. 496, 498, Fasc. VI, VII (Vol. II, Fasc. I, II).*

7. PRITHÍRÁJ RÁSAU, of Chand Bardáí, in the original old Hindí, edited by Dr. A. F. Rudolf Hoernle, No. 489, Part II, Fasc. IV.

8. SUŚRUTA SAMHITÁ, the Hindú System of Medicine according to Suśruta, translated from the original Sanskrit, by Dr. Uday Chánd Dutt, Civil Medical officer; Nos. 490, 500, Fasc. I, II.

9. STHAVIRÁVALÍ CHARITRA or PARIŚISHṬA PARVAN, being an Appendix of the Trishashṭi Sáláka Purusha Charitra, by Hemachandra, edited by Dr. Hermann Jacobi, Professor of Sanskrit and Comparative Philology in the Academy of Münster, Westphalia, No. 497, Fasc. I.

10. PARÁSARA SMṚITI, with the Commentary of Mádhava, edited by Pandit Chandrakánta Tarkálankára; No. 487, Fasc. I.

* In last year's Report, p. 27, No. 483, Fasc. V, was omitted from the list, by an oversight.

List of all Societies, Institutions, &c., to which the Publications of the Asiatic Society have been sent during the year, or from which Publications have been received.

§ Allahabad :—Editor, Panjab Notes and Queries.
* ——— :—Editor, Pioneer.
§ American Philological Association.
* Amsterdam :—Royal Zoological Society.
* Baltimore :—John Hopkins University.
* Batavia :—Society of Arts and Sciences.
§ ——— :—Magnetic and Meteorological Observatory.
* ——— :—Kon. Natuurkundige Vereeniging in Nederlandsch-Indië.
* Berlin :—Royal Academy of Sciences.
§ ——— :—Entomologischer Verein.
* Bombay :—Bombay Branch, Royal Asiatic Society.
* ——— :—Editor, Indian Antiquary.
* ——— :—Editor, Times of India.
* Boston :—Natural History Society.
* Bordeaux :—L' Académie Nationale des Sciences, Belles-Lettres et Arts.
§ ——— :—Société de Géographie Commerciale.
* ——— :—Société Linnéene.
† Brunswick :—Verein für Naturwissenschaft.
* Brussels :—L' Académie Royale des Sciences.
* ——— :—Musée Royal d' Historie Naturelle de Belgique.
* ——— :—Société Royale Malacologique de Belgique.
§ Buda Pest :—Royal Hungarian Academy of Sciences.
* Buenos Ayres :—Public Museum.
* Calcutta :—Agri-Horticultural Society of India.
* ——— :—Geological Survey of India.
* ——— :—Editor, Englishman.
* ——— :—Editor, Hindoo Patriot.
* Calcutta :—Editor, Indian Daily News.
* ——— :—Indian Mirror.
* ——— :—Indian Museum.
† ——— :—Mahommedan Literary Society.
† ——— :—Public Library.
* ——— :—Tuttobodhini Shova.
† ——— :—University Library.
† Cambridge :—University Library.
† Cassel :—Der Verein für Naturkunde.
† Cherbourg :—La Société Nationale des Sciences Naturelles.
† Christiania :—University Library.
* Clinton :—Editor, American Antiquarian and Oriental Journal.

* Colombo :—Ceylon Branch, Royal Asiatic Society.
* Copenhagen :—La Société Royale des Antiquaires du Nord.
† Cuttack :—Cuttack Library.
* Dehra Dun :—Great Trigonometrical Survey.
† Dublin :—Royal Dublin Society.
* ——— :—Royal Irish Society.
§ ——— :—Geological Society of Dublin.
† Edinburgh :—Royal Society.
§ ——— :—Botanical Society.
* Florence :—Società Italiana di Anthropologia e di Etnologie.
* Frankfurt :—Senckenbergische Naturforschende Gesellschaft.
* Geneva :—Société de Physique et d' Histoire Naturelle.
† Genoa :—Museo Civico de Storia Naturale.
§ Hague :—Koninklyk Instituut voor de Taal-Land-en Volkenkunde van Nederlansch-Indië.
* Halle :—Deutsche Morgenländische Gesellschaft.
† ——— :—Die Kais. Leopoldinisch-Carolinische Akademie.
* Helsingfors :—Société des Sciences de Finlande.
§ Ithaca (U. S. A.) :—Cornell University.
* Königsberg :—Die physikalisch-Oekonomische Gesellschaft.
* Lahore :—Editor, Civil and Military Gazette.
§ ——— :—Anjuman i-Panjab.
† ——— :—Agricultural Society.
† Leyden :—Royal Herbarium.
† Liége :—La Société Géologique de Belgique.
† ——— :—La Société des Sciences.
§ Lille :—Société de Géographie.
§ Lisbon :—Geographical Society.
† Liverpool :—Literary and Philosophical Society.
* London :—Anthropological Institute.
* ——— :—Editor, Academy.
* ——— :—Editor, Athenæum.
* ——— :—British Museum.
* ——— :—Geological Society.
* ——— :—Institution of Civil Engineers.
* ——— :—Institution of Mechanical Engineers.
* ——— :—Editor, Nature.
* ——— :—Linnean Society.
* ——— :—Royal Asiatic Society of Great Britain and Ireland.
* ——— :—Royal Astronomical Society.
* ——— :—Royal Geograghical Society.
* ——— :—Royal Institution.
* ——— :—Royal Microscopical Society.

* London :—Royal Society.
* ——— :—Society of Telegraph Engineers.
* ——— :—Statistical Society.
* ——— :—Zoological Society.
† Lyon :—La Société d' Agriculture, Histoire Naturelle et Arts Utiles.
* ——— :—Le Muséum d' Histoire Naturelle.
* ——— :—La Société d' Anthropologie.
§ ——— :—La Société de Géographie.
† Madras:—Literary Society.
* ——— :—Government Central Museum.
† Manchester:—Literary and Philosophical Society.
§ Melbourne :—Royal Society of Victoria.
* Moscow:—Société Impériale des Naturalistes.
* Munich :—K. Bayerische Akademie der Wissenschaften.
* ——— :—Editor, Repertorium der Physik.
† Netherlands:—Royal Society.
† New Haven:—Connecticut Academy of Arts and Sciences.
§ ——— :—American Oriental Society.
† Ottawa :—Geological and Natural History Survey of the Dominion of Canada.
† Oxford :—Bodleian Library.
* Paris :—La Société de Geographie.
* Paris :—Société de Anthropologie.
* ——— :—Société Asiatiqne.
† ——— :—National Library.
* ——— :—Société Zoologique.
* ——— :—Société Académique Indo-Chinoise.
* Philadelphia :—Academy of Natural Sciences.
§ ——— :—American Philosophical Society.
* Pisa :—Società Toscana de Scienze Naturali.
§ Prague :—K. K. Sternwarte.
§ Princeton :—Princeton College.
§ Rio de Janeiro :—Musen Nacional.
§ Rome :—Società degli Spettroscopisti Italiani.
§ ——— :—R. Accademia dei Lincei.
§ Roorkee :—Editor, Professional Papers on Indian Engineering.
§ St. Petersburgh :—Comité Géologique.
† ——— :—Imperial Library.
* ——— :—Russian Geographical Society.
* ——— :—L' Académie Impériale des Sciences.
§ ——— :—Hortus Petropolitanus.
* San Franciso :—Californian Academy of Arts and Sciences.
* Schaffhausen :—Swiss Entomological Society.

† Shanghai :—North China Branch, Royal Asiatic Society.
* Simla :—United Service Institution of India.
† Stettin :—Entomological Society.
† Stockholm :—Royal Swedish Academy of Sciences.
* Sydney :—Royal Society of New South Wales.
* Toronto :—Canadian Institute.
* Trieste :—Societá Adriatica di Scienze Naturali.
* Turin :—Reale Accademia delle Scienze.
† Ulwar :—Ulwar Library.
* Vienna :—Anthropologische Gesellschaft.
§ ——— :—K. K. Centralanstalt für Meteorologie und Erdmagnetismus.
* ——— :—K. K. Akademie der Wissenschaften.
* ——— :—K. K. Geologische Reichsanstalt.
* ——— :—K. K. Zoologisch-Botanische Gesellschaft.
§ ——— :—Ornithologischer Verein.
* Washington :—Commissioners of the Department of Agriculture.
* ——— :—Smithsonian Institution.
§ ——— :—U. S. Army Signal Service.
* ——— :—United States Geological Survey.
§ ——— :—U. S. Coast and Geodetic Survey.
* Wellington :—New Zealand Institute.
* Württemberg :—Natural History Society.
* Yokohama :—Asiatic Society of Japan.
§ ——— :—Editor Chrysanthemum.
* ——— :—German Oriental Society.
* Zagreb :—Archæological Society.

ABSTRACT OF THE PROCEEDINGS OF COUNCIL FOR 1883.

February 1st. Ordinary Meeting.

The Secretary read a letter which he had written to the Government of Bengal, in accordance with the general wish expressed at the last meeting of the Society, requesting the Lieutenant Governor to order further excavations to be made with a view to fixing the remaining sites in old Fort William definitely, and to direct tablets to be erected at the most important points. The reply to this letter from the Assistant Secretary, Government of Bengal, Public Works Department was also read, stating that orders had been given for excavations to be made and tablets to be erected at a cost not to exceed Rs. 300.

* Societies, &c., which have received the Asiatic Society's publications, and have sent their publications in return.

† Societies, &c., which have received the Asiatic Society's publications, but have sent none in return.

§ Societies, &c., whose publications have been received, but to which nothing has been sent in return.

An exchange of publications with the Société Académique Indo-Chinoise, Paris, was sanctioned.

An exchange of the Journal, Part I, with the "American Antiquarian and Oriental Journal" was sanctioned.

A letter was read from the Government of India, Military (Marine) Department, forwarding copy of a letter to the Director of the Indian Marine requesting that the Society should be supplied with information regarding the deep sea dredging at the close of the season's surveying operations.

A letter was read from the Under-Secretary to the Government of India, Home Department, forwarding a set of Blue Books relating to India for deposit in the Society's Library.

A letter was read from Mr. P. C. Wheeler forwarding a cheque for Rs. 96 in payment of the arrears of his subscription to the Society.

It was resolved that Government should be asked to sanction the distribution of the "Notices of Sanskrit manuscripts," according to a revised list prepared by Dr. A. F. R. Hoernle and Dr. Rájendralála Mitra.

The consideration of a proposal made by the Secretary that lectures should be given in connection with the Society as was done in 1873-74 was deferred.

The Secretary reported that Babu Buddhinath Bysack, one of the Society's pensioners, had died during the month of January.

The Annual Report was read and approved and the annual accounts and estimate of receipts and expenditure for 1883 were laid upon the table.

March 1st. Ordinary Meeting.

Read a letter from the Director of the Indian Marine stating that no dredging was carried on by the "Investigator" as there was no naturalist on board, but that specimens of the bottom brought up by the deep sea sounding apparatus had been carefully preserved and could be presented to the Society. The offer was accepted with thanks, and it was ordered that the specimens when received should be handed over to the Indian Museum.

A vote of thanks was passed to Dr. J. Scully for his services as Natural History Secretary, on his tendering his resignation of that post.

The various Committees for the ensuing year were elected.

At the suggestion of Dr. T. Duka, it was resolved that 3 of the original letters of the Tibetan scholar and traveller, Csoma de Körös, in the possession of the Society, should be presented to the Royal Hungarian Academy of Sciences at Buda Pesth.

On the recommendation of the Finance Committee, it was ordered that at the close of every year the Sanskrit MSS., Oriental Publications and other Funds should be each credited with a year's interest on the minimum monthly balance in their favour during the year.

March 29th. Ordinary Meeting.

Read a letter from the Société Impériale d'Archéologie, Moscow, asking for drawings and descriptions of all bronze implements, &c., found in India, and offering to exchange publications. The letter was ordered to be made over to the Trustees of the Indian Museum.

A letter from the Revenue Department of the Government of Bengal, asking for any information the Society may be able to furnish on the subject of the distribution &c., of locusts, was referred to the Natural History Secretary.

A letter was read from the Batavian Society of Arts and Sciences, asking for a facsimile of the Kawi inscription mentioned at page 68 of the Journal, Vol. XVII, and also of any other inscriptions in the Museum which may be likely to refer to the history of the Malay Peninsula and Archipelago. It was resolved that application be made to the Trustees of the Indian Museum with a view to obtaining copies of the inscriptions referred to.

A letter was read from the Superintendent, Baptist Mission Press, stating that owing to the length of time the printing of Dr. Mitra's Nepalese Buddhist Literature had been in hand, some of the earlier forms had been so injured that he could not complete the full number of copies of the work, but offering to pay for the copies short of the full number if the Council thought he should do so. Under the circumstances of the case, the Council considered that the Baptist Mission Press should be required to pay only half the cost of the copies short.

A proposal made by Mr. G. A. Grierson and Dr. A. F. R. Hoernle that a Congress of Orientalists should be held in Calcutta in connection with the Centenary celebration was considered to be impracticable in the present state of the Society's finances, and under the difficulties that would arise owing to the forthcoming International Exhibition.

Correspondence was submitted regarding a case of books despatched to Messrs. Trübner and Co., per S. S. "Nottinghill," in August 1881, and never delivered, and it was decided that the Society's Agents should be instructed to decline to accept the proposed compromise of half the claim; but, if legal proceedings would be necessary to obtain the whole, $\frac{3}{4}$ of the sum could be accepted.

The Treasurer reported that he had purchased Rs. 5000 of Government 4% paper.

April 26th. Ordinary Meeting.

A letter from Major W. F. Prideaux suggesting that the Society should support a recommendation to Government to obtain a series of electrotypes of Indian Coins prepared from the originals in the British Museum, for the Indian Museum in Calcutta, was ordered to be forwarded to the Trustees of the Indian Museum with the intimation that the Council considered Major Prideaux's suggestion as practicable and useful.

Read a letter from Dr. D. D. Cunningham regretting that owing to press of work he would be unable to take up the Natural History Secretaryship. Mr. Medlicott was requested to ascertain whether Babu P. N. Bose would be willing to undertake the duties of Natural History Secretary with special reference to the preparation of the account of the work of the Society in Natural History and Physical Science in connection with the Society's Centenary.

The Secretary reported that, the Rules of the Society being out of print, he had ordered a reprint of 300 copies, revised up to date.

May 31st. Ordinary Meeting.

A letter from H. E. Count Melchior de Longay, President of the Hungarian Academy of Sciences, thanking the Society for having presented the Academy with the 3 original letters of Csoma de Körös, was ordered to be read to the Society at its next meeting.

A letter was read from Mr. Holwell of Quebec asking if the monument erected by his great-grandfather, Governor Holwell, to the memory of the sufferers in the Black Hole was still in existence. Copies of the numbers of the Journal and Proceedings containing accounts of Mr. Bayne's excavations were ordered to be presented to Mr. Holwell.

The Philological Secretary submitted a statement showing the expenses incurred in the purchase of coins and suggested that the money obtained by the sale of duplicate coins should be used for the purchase of new ones. This suggestion was adopted.

The minutes of the Council were read on a Memorandum drawn up by Mr. J. Westland on the state of the Society's accounts and in accordance with the order passed in circulation the Treasurer submitted a list of old outstandings still shown in the Society's books and also a statement drawn up by Mr. Bion showing the present state of the Society's account with Messrs. Trübner and Co. All the old outstandings under Rs. 10 were ordered to be written off, and all debts of more than 5 years' standing to be cancelled.

The publication in the Bibliotheca Indica of 5 new works, recommended by the Philological Committee, was sanctioned.

Babu P. N. Bose was elected member of the Council and Natural History Secretary subject to the approval of the next General Meeting.

It was ordered that the alterations and changes made in the Rules since the general revision in 1876 should be embodied in the text of the reprint, with footnotes giving the dates of the changes.

June 28th. Ordinary Meeting.

A letter was read from the Under-Secretary to the Government of Bengal, Revenue Department, stating that the Lieutenant Governor approves of the way in which the Government grants for Oriental Publications and for the Conservation of Sanskrit MSS. have been applied.

A revised distribution list received from the Home Department through the Government of Bengal for the Notices of Sanskrit manuscripts was ordered to be compared with the revised list submitted by the Society and the result reported to the Council.

With reference to a letter from the Superintendent of the Baptist Mission Press stating that the proposed change of sewing instead of stitching in the doing up of the Proceedings would involve an extra charge of Re. 1 per 100, the Council was of opinion that the Proceedings should be properly done up within the contract price.

Read a letter from Mr. J. Beames complaining that whilst only a brief notice of the contents of his paper on the History of Orissa was published in the Proceedings, Dr. Mitra's criticisms were given in full, and requesting that the MS. of his paper may be returned if the Society does not intend to publish it. It was resolved that Mr. Beames's paper should be published in full in the Journal with a postscript by the author, at his option, in reply to Dr. Mitra's remarks.

At the suggestion of Dr. A. Sprenger it was resolved that application should be made for the loan of the copy of the Iṣâbah in the Khedivian Library at Cairo; or, if this was not feasible, that enquiries be made with a view to getting it transcribed.

On the recommendation of the Philological Secretary, Colonel A. C. Toker was elected a member of the Philological Committee and Mr. Amir Ali a member of the History and Archæology Committee.

Permission was granted to Major J. Waterhouse to copy the paintings of Sir William Jones and Warren Hastings to be reproduced by heliogravure with a view to their being published in the Society's Centenary Volume.

July 26th. Ordinary Meeting.

A letter was read from Messrs. Trübner and Co., stating that they had been unable to recover the full value of the contents of the case of books lost in the S. S. "Nottinghill" but that, acting under the instructions they had received, they had accepted $\frac{3}{4}$ of the amount.

A letter was read from the Maharaja of Shahpura asking why the Society had sent him the Bibliotheca Indica. The Secretary reported that, when the Bibliotheca Indica had first been sent to him, the Maharaja had acknowledged the receipt of the circular accompanying the books explaining the circumstances under which they had been sent and had thanked the Society for putting him on the distribution list. It was ordered that the Maharaja's name should be struck off from the free distribution list.

The acceptance by the Philological Secretary of an offer made by Pandit Ramnath Tarkaratna of the loan of a MS. of Parasara for the use of the Editor of that work in the Bibliotheca Indica series, was sanctioned.

At the suggestion of Dr. Mitra it was ordered that mention should be made in the Proceedings that the Society was endeavouring to obtain the loan or a transcript of the Cairo MS. of the Iṣâbah.

Read a letter from the Secretary to the Trustees, Indian Museum, stating that the Museum authorities had resolved not to move in the matter of the Kawi and Singapore inscriptions, asked for by the Batavian Society of Arts and Sciences, till Mr. J. F. Fleet, the Government Epigrapher, visited Calcutta.

The thanks of the Council were passed to Mr. J. Eliot for his services as Treasurer on his tendering his resignation of that post, and it was resolved that Mr. F. W. Peterson should be asked to take his place.

At the recommendation of the Secretary, Mr. J. H. Elliott was appointed Assistant Librarian, on trial, in the place of Mr. A. D. Tiery who had resigned.

The Secretary reported that no meeting had taken place in the first Wednesday in July as a quorum had not been present. The Secretary was requested to send a circular to all Resident members drawing attention to the difficulty of obtaining a quorum.

August 30th. Ordinary Meeting.

In accordance with Rule 7, six gentlemen who had been proposed and seconded at the last meeting of the Society were ballotted for and elected Ordinary Members.

A letter was read from the Under-Secretary to the Government of Bengal, Revenue Department, asking if the Society would be willing to assist the Government by acting as a numismatic authority for the purpose of advising the Government as to the value and interest attaching to coins found in Bengal. It was resolved that the Government should be informed that the Society will gladly assist with its advice in such matters.

With reference to a letter from the Société Géologique de Belgique

stating that the books sent by the Society were very much damaged by the quarantine authorities in disinfecting them, the Council ordered that the despatch of the Society's publications to Continental Societies should be suspended until the quarantine regulations were relaxed.

Read letters from the Superintendent, Baptist Mission Press, stating that the charge he would have to make for sewing instead of stitching the Society's Journal would be Rs. 5 per 100 if the Journal were taken by itself, and Rs. 4-8 per 100 for Journal and Proceedings, if the Journal and Proceedings were taken together. The terms first mentioned were accepted.

With reference to a letter from Mr. Beames regarding Dr. Mitra's criticisms on his paper on the History of Orissa, it was resolved that Mr. Beames's note in reply to Dr. Mitra's criticisms should be read at the next meeting of the Society; and that in future, in the case of an adverse criticism on a paper, if the author be not present to reply to it, the criticism should be sent to him with an invitation to send any reply which he may wish to have published in the Proceedings. The Secretaries were also instructed to endeavour to obtain abstracts of papers from the authors themselves for publication in the Proceedings.

The names of Dr. Krishna Dhana Ghosha and Dr. E. Lawrie were ordered to be suspended at the next meeting in accordance with Rule 38.

Mr. F. W. Peterson was elected member of Council and Honorary Treasurer, subject to the approval of the next meeting of the Society.

The Secretary stated that he very much doubted whether he would be able to find time to write the history of the Society for the Centenary volume, and suggested that the task should be assigned to some other member. At the request of Council, Dr. Rájendralála Mitra agreed to give a short sketch of the general history of the Society to serve as a preface to the Centenary volume.

Mr. J. H. Elliott was confirmed in his appointment as Assistant Librarian.

September 27th. Ordinary Meeting.

On the recommendation of the Natural History Secretary, an exchange of Part II of the Journal for the publications of the Vienna Ornithological Society was sanctioned.

With reference to a letter from the Secretary to the Executive Committee, Calcutta International Exhibition, asking if the Society would exhibit some of its Sanskrit and Persian MSS., it was ordered that a selection of MSS. should be made by the Philological Secretary, and that these should be lent only on condition that they were exhibited in glass cases under lock and key.

Read a letter from Pandit Moheschandra Nyayaratna, Officiating

Principal, Sanskrit College, stating that he has been asked by the Director of Public Instruction to select some MSS. for the Exhibition, and mentioning some of the Society's MSS. which he wished to borrow for the occasion. The loan was granted on condition that the Pandit was responsible for the safe custody and return of the MSS.

The Secretary reported that a revised distribution list for the "Notices of Sanskrit MSS." had been received from the Government of Bengal with all the additions proposed by the Society included. The Council directed distribution to be carried out in future in accordance with this list.

An advance to Dr. Rájendralála Mitra of Rs. 600 for travelling expenses and the purchase of MSS. was sanctioned.

It was resolved that the printing of the Centenary Review should be entrusted to Messrs. Thacker, Spink and Co., and that a thousand copies should be struck off.

The purchase of another glass case was sanctioned for the Government Sanskrit MSS.

November 1st. Ordinary Meeting.

A letter was read from the Under-Secretary, Government of Bengal, dated 27th October, conveying the Lieutenant-Governor's thanks to the Asiatic Society for consenting to act as the numismatic authority to be consulted with regard to rare coins which may be discovered from time to time in Bengal.

A notification from the Editor of the "Panjab Notes and Queries", promising to send his paper to the Asiatic Society for 6 months gratis, was ordered to be acknowledged with thanks.

The Proceedings and Part II of the Journal were ordered to be sent in exchange for the publications of the Canadian Institute, Toronto.

In accordance with a request from Signor Luis M^{a} Soler, a copy of the Journal containing a paper by the Spanish traveller Simbaldo de Mas was ordered to be sent to him.

With reference to a letter from Professor Jolly, proposing to withdraw his projected edition of extracts from the Commentaries of Manu as he had heard that a similar work was about to be published by the Hon. Rao Saheb V. N. Mandalik, it was resolved that Professor Jolly be informed that the Society hoped he would continue the edition as the Society saw no reason for abandoning the work.

The proposed addition of the Sarvanakrama to Dr. Mitra's edition of Sannaka's Brihad-devata was at Dr. Mitra's suggestion directed to be given up, as the work was about to be published in the "Anecdota Oxoniensia."

On Babu P. N. Bose's resignation of the Natural History Secretaryship, a vote of thanks was passed to him for his services, and Mr. L. de Nicéville was elected member of Council and officiating Natural History Secretary till the return of Mr. Wood-Mason, subject to confirmation by the Society.

It was resolved that all arrangements for the speedy printing of the Library Catalogue should be left in Mr. H. B. Medlicott's hands, with full powers.

Messrs. Mackintosh, Burn and Co.'s estimates for repairing the exterior of the Society's Rooms and the outhouses were accepted on the condition that the repairs should be completed by the end of November.

November 29th. Ordinary Meeting.

The future distribution of the "Notices of Sanskrit Manuscripts" was ordered to be carried out in accordance with a revised list received from the Home Department, through the Government of Bengal.

The Secretary reported that in reply to a letter received from Mr. R. R. Bayne he had informed him that the Society had no copyright and that therefore there could be no objection to his reprinting his paper on the Black Hole.

Mr. H. B. Medlicott reported that he had transferred the printing of the Library Catalogue to the City Press, who had agreed to carry on the work at the rate of Rs. 2-8 a page, exclusive of binding, for 750 copies. This arrangement was sanctioned.

On the recommendation of the Finance Committee, a pension of Rs. 4 per month was awarded to Ananta Dass, a bearer who had served the Society for 45 years.

It was resolved that the Special Centenary meeting, for the presentation of the Centenary Review and the election of six Centenary Honorary Members, should be followed by a dinner to be held in the Society's Meeting Room and that the arrangements should be entrusted to the Centenary Committee.

The monthly general meeting of the Society was postponed to Wednesday the 12th December, as tho Governor-General's levée would take place on the evening of the usual day of meeting.

December 28th. Ordinary Meeting.

A letter received from Mr. W. A. Holwell, thanking the Society for the Nos. of the Journal and Proceedings which had been sent to him and giving information regarding old family portraits &c., in his possession, was ordered to be read to the Society at its next meeting.

On the recommendation of the Philological Secretary, the Proceedings and Part II of the Journal were ordered to be sent in exchange for

the publications of the Oberhessische Gesellschaft für Natur und Heilkundo, Giessen.

In reply to a letter from the Superintendent of the Indian Museum, enquiring if some notes on the anatomy of the *Cyclophoridæ* by Dr. Stoliczka were in the possession of the Society, permission was granted to the Superintendent of the Museum to look through a large packing-case of various papers of Dr. Stoliczka's in the Society's rooms.

It was resolved that Dr. J. Joule, Mr. C. Meldrum and Professors Hæckel, Senart, Sayce and Monier Williams should be recommended to the Society for election as special Centenary Honorary Members.

With reference to a letter from Dr. R. L. Mitra, stating that in his opinion the proposed election of six special Centenary Honorary Members was contrary to Rules 2 (b) and 13, it was resolved that, in the opinion of the Council, under the special circumstances of the Centenary celebration not contemplated in the Rules, these special Honorary Members could be elected in the manner proposed, provided the course adopted was approved by an Ordinary Meeting of the Society.

In reply to a letter from Mr. R. H. Wilson, asking for the names of any gentlemen likely to give assistance in collecting information regarding the races, castes and trades of Eastern Bengal, the names of several gentlemen suggested by the Philological Committee were ordered to be forwarded to him.

The President announced that H. E. the Viceroy had kindly consented to be present at the Centenary dinner as Patron of the Society. Messrs. A. W. Croft and J. Gibbs were appointed a Sub-Committee, with power to add to their number, for the purpose of making fitting arrangements for the dinner.

The Council prepared a list of the proposed office-bearers and Members of Council for the ensuing year to be circulated to Members of the Society in accordance with Rule 44.

The Report having been read, the PRESIDENT invited the meeting to put any questions or to offer any remarks which any member might think necessary in connection therewith.

No remarks having been offered, the PRESIDENT moved the adoption of the Report, and asked the meeting, if they agreed to this motion, to add to their acceptance of it a vote of thanks to the Honorary Secretaries and Honorary Treasurer, to whose exertions the Society was so greatly indebted for the results shown in the report.

The motion was unanimously carried.

The PRESIDENT said that he wished to take this opportunity to repair an omission for which he himself was mainly responsible. It would be remembered that at the Centenary Meeting, held on the 15th January, the

Review of the Society's work, which had been prepared by the Honorary Secretaries and Dr. Rájendralála Mitra, was laid upon the table. The review was a work of much labour and research, and was a most valuable and interesting record of the Society's proceedings during the past century. The thanks of the Society were undoubtedly due to the compilers of the Review, and a vote to this effect ought to have been proposed at the Centenary Meeting. Unfortunately, the business of the meeting was rather hurriedly despatched, as the members were in expectation of the immediate arrival of the Viceroy. The consequence was that he (the Chairman) neglected on that occasion to propose a vote of thanks to the compilers of the Review. He wished to take this opportunity, the earliest which had offered itself, of repairing this omission, and he would therefore ask the meeting to supplement their vote of thanks to the Society's officers by a special vote of thanks and acknowledgment to the compilers of the Centenary Review.

Mr. WESTLAND enquired whether, if the vote were passed, it could be entered on the proceedings of the Centenary Meeting.

The CHAIRMAN expressed his entire concurrence in this suggestion.

The meeting then unanimously resolved that a special vote of thanks be given to the compilers of the Centenary Review, and that this vote be recorded on the proceedings of the Centenary Meeting.

The PRESIDENT announced that the Scrutineers reported the result of the election of Officers and Council to be as follows:

President.

H. F. Blanford, Esq., F. R. S.

Vice-Presidents.

Dr. Rájendralála Mitra, C. I. E.
The Hon. J. Gibbs, C. S. I., C. I. E.
D. Waldie, Esq., F. C. S.

Secretaries and Treasurer.

L. de Nicéville, Esq.
Dr. A. F. R. Hoernle.
Dr. H. W. M'Cann.
F. W. Peterson, Esq.

Other Members of Council.

The Hon. H. J. Reynolds, B. A., C. S.
H. B. Medlicott, Esq., F. R. S.
J. Westland, Esq., C. S.
Nawab Abdul Latíf Khán Bahádur, C. I. E.

Major J. Waterhouse, B. S. C.
Alex. Pedler, Esq., F. C. S.
A. W. Croft, Esq., M. A.

Mr. J. WESTLAND and Major J. WATERHOUSE were appointed to audit the annual accounts.

The CHAIRMAN said that the meeting would now resolve itself into the ordinary monthly meeting, and that it accordingly devolved upon him to vacate the chair which the kindness of the Society had permitted him to occupy for nearly two years. In laying down his office, he begged again to express his heart-felt sense of the honour the Society had done him in electing him to be their President. He wished to add an expression of his acknowledgments to his colleagues of the Council for the assistance and support which he had uniformly received from them in the discharge of his duties. He now called upon the President, Mr. H. F. Blanford, to take the chair.

The meeting was then resolved into the Ordinary Monthly General Meeting.

H. F. BLANFORD, Esq., F. R. S., President, in the Chair.

The PRESIDENT on taking the chair said :—

I am deeply sensible of the great honour conferred on me by the Society, in electing me to this high office, an honour for which I was entirely unprepared. It was indeed a great, though flattering, surprise, when, a few weeks ago at Gauhati, I received the printed list of nominees for the offices of the Society during the ensuing year, to find the list headed by my own name. Had I been present in Calcutta, it would have been my duty to point out to the Council that my prolonged absence from the Presidency is likely seriously to restrict my ability to take an active part in the management of the Society's affairs, and to suggest the advisability of a different selection. I can indeed lay claim to somewhat lengthened experience in the affairs of the Society, but I certainly could have wished, as President, to give them less interrupted attention. The main facts are, however, well known to you all, and I have no fear that the well-being of the Society will in any way suffer from the absence of the President, as it will be watched over and guarded by the able and experienced officers whom you have elected as Vice-Presidents and Secretaries. I thank you, Gentlemen, very cordially for this honourable distinction.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :

1. From the Authors and Translators,—(1) Etude sur le Patois Créole Mauricien, by C. Baissac ; (2) Sanskrit Text of the Sikshā-Patrī

of the Svāmi-Nārāyana Sect, and Translation, by Monier Williams; (3) Religious Thought and Life in India, Part I, by Monier Williams; (4) Sanskrit Ode to the Congress at Berlin, September, 1881, by Ramā-Bāī, with a translation by Monier Williams.

2. From the Superintendent, Government Botanical Gardens, Saharunpore,—A List of the Grasses of North-Western India, by J. F. Duthie.

3. From the Indian Museum,—Catalogue and Handbook of the Archæological Collections, Part II, by Dr. J. Anderson. (6 copies.)

4. From the Military Department,—The Second Part of the Chronicle of Peru, translated and edited by C. R. Markham.

5. From E. F. T. Atkinson, Esq.,—(1) Hindu Chronology and Antediluvian History, by S. R. Bosanquet; (2) Catalogue of the Coleoptera of Scotland, by A. Murray.

6. From C. E. Pitman, Esq.,—Graham Island, copy of a letter dated August 5th, 1831, from Humphrey le Fleming Senhouse.

7. From the Duke of Northumberland,—(1) A Descriptive Catalogue of Antiquities, chiefly British, at Alnwick Castle; (2) Catalogue of the Collection of Egyptian Antiquities at Alnwick Castle.

8. From the Bengal Government,—Fifty-one Photographic Illustrations taken by order of the Government of India of some selected objects shown at the Third Exhibition of Native Fine and Industrial Art, opened at Simla by H. E. the Viceroy on the 24th September, 1881.

9. From the Leyden University,—Ibn-Wādhih qui dicitur al-Jaqubī historiæ, Parts I-II, by M. Th. Houtsma.

10. From Dr. A. F. R. Hoernle,—The Hindoos as they are, by Sib Chunder Bose.

11. From the Royal University of Norway,—(1) Die Anämie, by S. Laache; (2) Krystallographisk-Chemiske undersogelser, by Th. Hiortdahl; (3) Enumeratio Insectorum Norvegicorum, Fasc. V, Part 1, by H. Siebke, edited by J. S. Schneider; (4) E'tudes sur les Mouvements de l' Atmosphère, Part II, by C. M. Guldberg and H. Mohn; (5) Myntfundet fra Grøslid i Thydalen, by L. B. Stenersen; (6) Carcinologiske Bidrag til Norges Fauna, Vol. I, Part 3, by G. O. Sars; (7) Fortegnelse over den Tilvæxt, som det Kgl. Frederiks Universitets Bibliothek har erholdt i Aarene 1880-81; (8) Index Scholarum in universitate Regia Fredericiana centesimo quadragesimo primo ejus semestri anno MDCCCLXXXIII ab Augusto mense habendarum.

12. From B. S. Lyman, Esq.,—A Map of most of Japan to show the position of the Oil Land Surveys and other mineral localities.

The following gentleman duly proposed and seconded at the last

meeting was ballotted for and elected an Ordinary Member of the Society:—

Major A. C. Bigg-Wither.

The following gentlemen are candidates for ballot at the next meeting:—

1. The Hon. Sir Auckland Colvin, K. C. M. G., proposed by the Hon. J. Gibbs, C. S. I., C. I. E., seconded by the Hon. H. J. Reynolds, B. A., C. S.

2. John Holdsworth-Fisher, Esq., Patna, proposed by E. F. T. Atkinson, Esq., B. A., C. S., seconded by Dr. H. W. M'Cann.

3. John Hooper, Esq., C. S., proposed by V. A. Smith, Esq., C. S., seconded by Dr. A. F. R. Hoernle.

4. A. P. MacDonnell, Esq., C. S., proposed by E. F. T. Atkinson, Esq., B. A., C. S., seconded by Dr. J. Anderson.

5. H. H. Risley, Esq., C. S., proposed by Dr. D. D. Cunningham, seconded by Major J. Waterhouse.

6. Lieut.-Col. Charles Swinhoe, Bombay, proposed by E. F. T. Atkinson, Esq., B. A., C. S., seconded by Dr. J. Anderson.

7. The Hon. Col. S. T. Trevor, R. E., proposed by Hon. J. Gibbs, C. S. I., C. I. E., seconded by Hon. H. J. Reynolds, B. A., C. S.

8. Nawab Ali Kader Syed Hassan Ali Mirza Bahadur, Nawab Bahadur of Moorshedabad, proposed by Prince Jahan Kader Mirza Mohammed Wahed Ali, seconded by Pundit Pran Nath Saraswati.

The following gentlemen have intimated their desire to withdraw from the Society:—

Colonel J. Sconce.

T. Blissett, Esq.

R. Maconachie, Esq.

The SECRETARY reported that the following congratulatory address on the Society's Centenary had been received since the Centenary Meeting from the Königl. Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden:

The Society's Centenary induces me to give expression to the most cordial and sincere wishes from the part of the Royal Museum of Dresden, and to the hope that the Society may flourish in all future as hitherto and may increase in influence and importance to science.

The Director of the Royal Zoological, Anthropological and Ethnographical Museum.

(Signed) A. B. MEYER, M. D.

The HON'BLE MR. GIBBS read the following note on "Imitation Greek gold coins:"

I think it right to bring to the Society's notice the great extent to which forgeries or imitations of coins are now being placed in circulation. I especially allude to imitations of coins of the Oxus finds and of other Greek varieties. General Cunningham has brought to notice one of what are usually known as the Punjab forgeries, a coin of Andragoras (A. S. B. Proceedings, July 1880). The original was, I believe, among the early Oxus finds, and is now in the British Museum. General Cunningham has another, and I believe there is a third somewhere at home. The makers of these imitations are supposed to reside not 50 miles from Rawal Pindi, and are great adepts at the art. The earliest imitations—apparently not casts, but struck coins—were, I believe, the gold Andragoras, and the gold Antiochus with the horned horse's head reverse. A want of knowledge of Greek has, however, led the die-makers to proclaim the falsity of their wares to any careful observer. The earlist specimen, now in the British Museum, reads ΑΝΔΡΑΓΟΡ. General Cunningham's reads ᴰΑΓΟΡΟΥ and it was between these two coins that the proper name of the king was made out. The imitators had casts of the latter coin, but managed to make their *Rev* die strike the gold more fairly, and the consequence is that the loop of the P being read as an O and the A as a Δ the name ΟΔΓΟΡΟΥ is invented! by which these forgeries may be known. But another coin has been imitated, and I believe a good many specimens have been sold, some at very high prices; this is the unique coin of 'Phahaspes' noticed in Vol. L of the Journal, p. 171, in General Cunningham's paper on the last Oxus find. The head of the king is beautifully imitated. I compared one, which I purchased last year for the purpose, with the original in the British Museum, and neither I nor any of the Curators there could find any difference between the *obverses*, but the Quadriga on the *reverse* betrayed the imitation. (A notice of the originals of these coins will also be found illustrated in Vol. XIX of the Numismatic Chronicle, pl. I.)

The other day some 2 or 3 dozen gold coins were submitted to me for inspection, and proved to be nearly all imitations; amongst them were specimens of both the above mentioned. I sent them over to Major Prideaux, whose name is well known in the numismatic world, who, on examining more carefully than I did the reverses of the 3 forgeries of the Andragoras type, found the coiner had by mistake struck one with the Quadriga and Aramaic inscription of the Phahaspes coin instead of the Quadriga and Greek inscription of the Andragoras!—not only affording an additional proof of the falsity of both, but proving that both imitations were made in the same manufactory.

As regards the Antiochus of which I produce a specimen, to any one who is familiar with true Greek work, the bust would at once reveal its own

baseness; the hair looks like so many Oxford sausages placed on the head, but the reverse, which should have read BAΣIΛEΩΣ ANTIOXOY, has the former word so blundered that it is not legible at all; it looks like DAIIA$\overset{\vee}{\text{V}}$▽. I have however seen other specimens in which this was corrected and the word written correctly, while in others ΔIKAIOY has been added.

The other coins to which I allude are the gold staters of Diodotus, Antiochus and Euthudemus. These imitations vary in workmanship; they are all good but that of Diodotus is the best. I purchased one of the latter purposely to take home last year, and it puzzled some of the best experts there; the Curators at the Museum and Mr. Whelan of Rollin and Feuardent's firm however pronounced against it, but our veteran friend Mr. Edward Thomas would not reject it. My own opinion has always been that it was an imitation, and General Cunningham agreed with me. We had several, I should think 6 or 8, submitted to us for opinion, and had arrived at the same conclusion; but, on comparing the coin I have, and which I now produce, with the other imitations in the British Museum and also the one which Messrs Rollin and Feuardent have, it was so manifestly superior in finish, especially in the reverse, that it was some time before those who were examining it carefully could say it was not genuine. It is only the general look of this coin which to a practised eye throws doubt on it, I may say on the principle given in the old lines—

> 'The reason why I cannot tell,
> I do not like thee, Dr. Fell.'

But there are other imitations of these coins far inferior to this particular one, but finding an exact copy of mine in the lot sent me a few days ago for inspection confirms the view of its not being genuine.

The Antiochus and Euthudemus, which I also exhibit, are not of such good work. I have seen, I should say, 8 or 10 specimens of each and there were four of the former and one of the latter in the lot just mentioned. And seeing them altogether has convinced my friend Major Prideaux that all, including my Diodotus, are of the same manufacture, he having before been inclined to think mine genuine.

I should mention that the weights are correct and the quality of the gold apparently what it should be. I am afraid that these were specially manufactured for the officers who went on the late Affghan campaign, as General Cunningham and I have had a good many specimens sent for opinion during the past 4 years, and often with this apparently strong evidence in their favour "I got it myself when in Cabul."

The above are the more ordinary imitations, but there are others, one or two double darics and other coins, but I only saw one or two of these about 3 years ago, and cannot now describe them accurately.

I trust this notice may be of use as a warning to intending purchasers, although it may also prove a source of disappointment to those who possess such specimens. I think it, however, my duty to make the matter public through the Proceedings of this Society.

The following paper was read—

Notes on the History of Religion in the Himálaya of the N. W. P.—
By E. T. Atkinson, B. A., B. C. S.

(Abstract.)

The writer notices the flourishing state of Buddhism in the fifth and seventh centuries, and that about the tenth century it appeared to cease to be the faith of any considerable section of the Indian people. The inquiry naturally arises how did Buddhism disappear, and what was its nature and character at the time when it nominally ceased to be one of the leading religious beliefs of India. The answer to this inquiry cannot be found in the ordinary European works relating to the history of religion in India. These are mainly compilations from local treatises which, however valuable for the history of religion, have no share in making or guiding the actual living beliefs of the masses. For this reason a census of the temples in the tract between the Tons on the west and the Sárda on the east in that portion of the Himálaya which lies within the North-West Provinces was undertaken, with the result that the popular religion comprised a curious blending of pre-Bráhmanical, Bráhmanical and Buddhistic practices far removed from the ideal homogeneous Vaidik system popularly supposed to represent the Hinduism of the present day. The object of this paper is to record these results, and, for this purpose, the festivals usually observed in the Kumáon Himálaya are first taken up and described, and then the domestic ritual in common use. A second paper will take up the temples, the forms worshipped therein and the history of these forms.

The popular festivals in Kumáon are ruled either by the solar calendar and Saka year or by the luni-solar and Vikramáditya year. The general result shows that even at the present day the popular festivals are by no means of Bráhmanical origin. They are those held at the two harvests, those in honour of the Nágas at the Jeṭh Daśahra and Nágapanchamí, the great S'aiva Sakti observances on the first nine days of Chait and Asoj and the festivals in honor of Bhairava, Nágarája and the rural deities Ghaṇṭakarṇa, Govil, &c. The sacrifice of kids is a part of almost all the ceremonies on these occasions, young male buffaloes are also offered, and in former times human sacrifices were not uncommon at the temples of the dark form of the consort of S'iva. All these facts mark the non-Bráhmanical origin of the existing form of worship. The Khá-

śiyas, as the people of Kumáon are called by their neighbours, possess many traits in common with the Dasyas of the Vedas. Practically they have no Vedas, no Vaidik rites, and their sacrifices and caste observances are not in accordance with orthodox usage. It was these distinctions that placed them fifteen hundred years ago outside the pale of the twice-born and which even under the more liberal views of the present day hold them outcastes.

The domestic ritual for all purposes from birth to marriage is then given in some detail from the *Daśakarmádi-paddhati*, the authority in use in the Kumáon Himálaya, and the funeral ceremonies from the *Preta-manjari*. First of all the *sandhyá*, or daily prayers in local use, are described in such detail as it is believed has not yet been attempted. These open with the rinsing of the mouth, the sprinkling and aspersion, and proceed to the *kara-nyása* and *anga-nyása* with their *muaras* and *mantras* clearly derived from the Tantras and other than Bráhmanical sources. It is shown that the forms used are common alike to Buddhism and to Śivaism and are to be found in the present practices of Tibetan Buddhists as well as in those of Musalmán converts from the aboriginal tribes. The ceremonies to be observed in the following services are then given :— *Svasti-váchana, Ganeśa-púja, Mátṛi-púja, Nándí-śráddha, Puṇyáha-váchana, Kalaśa-sthápana* and *Rakshá-vidhána*. Next follow the *Játa-karma* on the birth of a son and the *Shashṭhí-mahotsava:* then the *Námakaraṇa* or naming the child: *Janmotsava* or anniversary of birth and the *karṇavedha* or piercing of the ear. The observances in honour of the nine planets and those when the hair is cut (*chúrakaraṇa*) and the *janeo* or sacred thread is put on are followed by those relating to marriage and some of the numerous special services for particular occasions: altogether affording a tolerably complete view of the domestic ritual in use in the Kumáon Himálaya. The funeral ceremonies include those for the dying and for cremation, and all the purificatory usages after cremation for the first twelve days.

This paper will be published in full in the Journal, Pt. I.

LIBRARY.

The following additions have been made to the Library since the Meeting held in January last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 4.

Baltimore. Johns Hopkins University,—American Journal of Mathematics, Vol. VI, No. 2.

———. ———. American Journal of Philology,—Vol. IV, No. 3.

———. ———. Circulars, Vol. III, No. 27.

Bombay. Indian Antiquary,—Vols. XII, Parts 149-151, October to December, 1883; XIII, No. 152, January, 1884.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 23-24, 1883; 1, 1884.

Calcutta. Geological Survey of India,—Memoirs, Vol. XX, Parts 1-2.

———. Original Meteorological Observations,—June and July, 1883.

Chicago. American Antiquarian,—Vol. V, No. 4.

Christiania. Beretning om Bodsfængslets Virksomhed,—1878 to 30th June, 1882.

———. Norske Frederiks Universitets,—Aarsberetning, 1878-1882.

———. Norske Turistforenings,—Arbog, 1882.

———. Nyt Magazin,—Vols. XXIV, Nos. 4; XXV, 1-4; XXVI 1-4; XXVII, 1-4.

———. Videnskabs-Selskabet,—Forhandlingar, 1879-1881.

Dorpat. Naturforscher-Gesellschaft,—Archiv für die Naturkunde, Series i, Vol. IX, Nos. 1-2; Series ii, Vols. VIII, No. 4; Nos. IX, 1-4.

———. ———. Sitzungsberichte, Vols. V. Nos. 3; VI, 1-2.

Ithaca. The Library of Cornell University,—Vol. I, No. 7.

Lahore. Anjuman-i-Punjab,—Journal (English Section), Vol. IV, Nos. 1-5.

London. Academy,—Nos. 606-610.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XIII, No. 2, November, 1883.

———. ———. List of Members, November, 1883.

———. Athenæum,—Nos. 2929-2933.

———. Geological Society of London,—List of Fellows, 1st November, 1883.

———. Nature,—Vol. XXIX, Nos. 737-741.

London. Quarterly Journal of the Geological Society,—Vol. XXXIX, Part 4, No. 156, November, 1883.

———. Royal Astronomical Society,—Monthly Notices, Vols. XLIII, No. 9 (Supplementary Number); XLIV, No. 1.

———. Royal Geographical Society,—Proceedings, Vol. V, No. 12, December, 1883.

———. Royal Microscopical Society,—Journal, Vol. III (Series II) Part 6, December, 1883.

Moscow. Société Impériale des Naturalistes,—Bulletin, Vols. LVII, No. 4; LVIII, No. 1.

———. ———. Nouveaux Mémoires,—Vol. XIV, No. 4.

———. ———. Meteorologische Beobachtungen,—Vol. LVIII.

Munich. Repertorium der Physik,—Vols. XIX, Nos. 11-12; XX, No. 1.

New Haven. American Oriental Society,—Proceedings, October, 1883.

Paris. Revue Politique et Littéraire,—Vol. XXXII, Nos. 24-26.

———. Société de Géographie,—Bulletin, Vol. IV, No. 4.

———. ———. Comptes Rendus des Séances,—Nos. 17-18, 1883.

Rome. R. Accademia dei Lincei,—Atti, Vol. VII, No. 15.

Roorkee. Professional Papers on Indian Engineering,—Vol. I (Series III), No. 4.

Simla. United Service Institution of India,—Special Journal, Vol. XII, No. 58.

Vienna. Anthropologische Gesellschaft,—Mittheilungen, Vol XIII, No. 2.

———. Ornithologischer Verein,—Mittheilungen, Vols. I-VI, 1877-82; VI, Nos. 1-3, 12, 1883.

Books and Pamphlets,

presented by the Authors and Translators.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR MARCH, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 5th March, 1884, at 9 P. M.

H. F. BLANFORD, ESQ., F. R. S., President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced:—

1. From the Authors, Compilers, &c.,—(1) Ratna-Rahasya, by Dr. Ram Das Sen; (2) Alphabetical Index to C. Marvin's Works, &c. No. III, by Major W. E. Gowan; (3) Saturated steam the motive power in Volcanoes and Earthquakes: great importance of Electricity, by R. A. Peacock; (4) Field and Garden crops of the North-Western Provinces and Oudh, Part II, by J. F. Duthie and J. B. Fuller; (5) The Coins of the Andhras, by Edward Thomas; (6) Data obtained from Solar Physics and Earthquake Commotions, applied to elucidate Locust Multiplication and Migration, by A. H. Swinton.

2. From the Government, N.-W. Provinces,—Statistical, Descriptive and Historical account of the North-Western Provinces of India, Vol. IX, by F. H. Fisher.

3. From St. Xavier's College Observatory,—Observations from July to December, 1883.

4. From the Curator of Ancient Monuments in India,—Second Report, for 1882-83.

5. From the British Museum,—Catalogue of Oriental Coins in the British Museum, Vol. VIII.

6. From the Meteorological Reporter to the Government of India, —Rainfall Chart of India, in two sheets.

7. From Prince Roland Bonaparte,—Collection Anthropologique du Prince Roland Bonaparte; Kalmouks. (Photographs.)

The following gentlemen duly proposed and seconded at the last meeting were ballotted for and elected Ordinary Members:

1. Hon'ble Sir A. Colvin, K. C. M. G.
2. J. Holdsworth-Fisher, Esq.
3. J. Hooper, Esq., C. S.
4. A. P. MacDonnell, Esq., C. S.
5. H. H. Risley, Esq., C. S.
6. Lt.-Col. Charles Swinhoe.
7. Hon'ble Col. S. T. Trevor, R. E.
8. Nawab Ali Kader Syed.
9. Hussan Ali Mirza Bahadur.

The following gentlemen are candidates for election at the next meeting:

John Parry Scotland, Esq., C. E., Executive Engineer, Buxar, proposed by T. F. Peppé, Esq., seconded by the Hon'ble H. J. Reynolds.

Edmund F. Mondy, Esq., F. C. S., A. R. S. M., proposed by H. B. Medlicott, Esq., seconded by A. W. Croft, Esq.

Major H. H. Cole, R. E., proposed by H. F. Blanford, Esq., seconded by Major W. F. Prideaux.

The Secretary reported that Major J. G. Van Someren had intimated his desire to withdraw from the Society.

The Council reported that the Hon'ble H. J. Reynolds had been elected a Trustee of the Indian Museum on behalf of the Society, in the place of Mr. J. Eliot who had resigned.

The SECRETARY read the names of the following gentlemen appointed to serve on the several Committees during the ensuing year.

Finance Committee.

Dr. Rájendralála Mitra.
H. B. Medlicott, Esq.
J. Westland, Esq.
Alex. Pedler, Esq.
J. C. Douglas, Esq.
E. F. T. Atkinson, Esq.

Library Committee.

Dr. Rájendralála Mitra.
H. B. Medlicott, Esq.
Dr. D. Waldie.
Major J. Waterhouse.
A. W. Croft, Esq.
Dr. Mohendralal Sircar.

Dr. D. D. Cunningham.
Babu Pran Nath Pandit.
Babu Pratapa Chandra Ghosha.

Philological Committee.

Dr. Rájendralála Mitra.
Nawab Abdul Latif Khan Bahadur.
Rev. K. M. Banerjea.
J. Beames, Esq.
F. S. Growse, Esq.
Dr. G. Thibaut.
C. J. Lyall, Esq.
G. A. Grierson, Esq.
Hon'ble J. O'Kinealy.
Sayad Ahmad Khan, C. S. I.
Col. A. C. Toker.

Natural History Committee.

H. B. Medlicott, Esq.
Dr. G. King.
A. O. Hume, Esq.
S. E. Peal, Esq.
Dr. D. D. Cunningham.
Dr. J. Anderson.
R. D. Oldham, Esq.
L. de Nicéville, Esq.
E. F. T. Atkinson, Esq.
Babu P. N. Bose.

Physical Science Committee.

H. B. Medlicott, Esq.
Dr. D. Waldie.
Major J. Waterhouse.
Alex. Pedler, Esq.
A. J. L. Cappel, Esq.
F. Fedden, Esq.
Rev. Fr. E. Lafont.
Dr. Mohendralal Sircar.
J. Eliot, Esq.

Coins Committee.

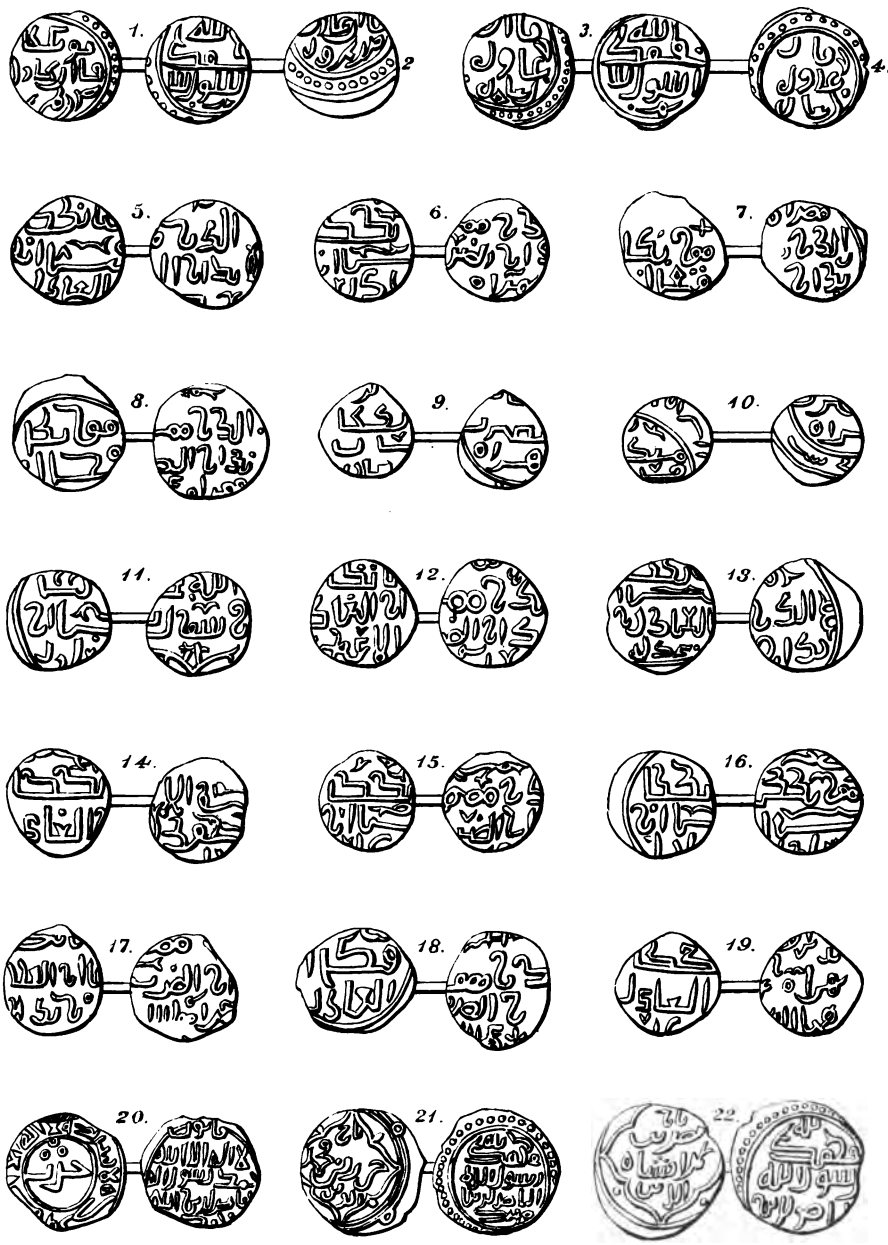
Dr. Rájendralála Mitra.
Hon'ble J. Gibbs.
Major General A. Cunningham.
H. Rivett-Carnac, Esq.
Major W. F. Prideaux.

History and Archæology Committee.

Dr. Rájendralála Mitra.
Hon'ble J. Gibbs.
Major-General A. Cunningham.
Dr. J. Anderson.
R. R. Bayne, Esq.
J. Beames, Esq.
Babu Pratapa Ch. Ghosha.
F. S. Growse, Esq.
Babu Pran Nath Pandit.
H. Rivett-Carnac, Esq.
Captain R. C. Temple.
Amir Ali, Esq.
E. F. T. Atkinson, Esq.

Mr. BLANFORD exhibited the autographic trace of the Calcutta barograph on the days 26th—30th August 1883, and also reduced copies of those of a number of European and American observations on the same days, showing the effects of the eruption of Krakatoa. He remarked—"At a meeting of the Royal Society on the 13th December, Mr. R. Scott brought before the Society the originals of the European barograms now exhibited, with reference to certain disturbances of the barometer on the last days of August, and at the following meeting a note was read by General R. Strachey, an abstract of which had been published in *Nature*, in which it was shown that these disturbances were referable to the eruption of Krakatoa, and afford evidence that an explosion, which must have occurred at 9h. 32min. A. M. (Krakatoa local time) at the volcano, had produced a concussion in the atmosphere that had been propagated as an atmospheric wave not less than $3\frac{1}{2}$ times round the earth and with a rate of progress nearly equal to that of the sound wave, so that, while the branch of the wave moving from East to West completed a revolution in 36 h. 57 min., that from West to East accomplished the same distance in 35 h. 17 min. The disturbance starting from Krakatoa spread out as a circular wave expanding to the dimensions of a great circle, and then, contracting again to the antipodes of Krakatoa, would expand again from that point as a circular wave and return to its starting point and so on. As some of the European barograms bore evidence of four transits of one limb of the wave and three of the other limb, the wave must have accomplished $3\frac{1}{2}$ revolutions before it became evanescent.

Computing the rate of progress from the intervals between the successive transits of the waves, General Strachey has determined the



N. B.—ALL ARE SILVER EXCEPT THE LAST THREE, WHICH ARE MIXED SILVER AND COPPER.

C. J. Rodgers del: Lith: & Printed by W. Newman & Co., Ld., Calcutta.

SOME COINS FROM KANDAHAR.

time of the initial disturbance at Krakatoa at 9 h. 32 min. A. M. (Local mean time). There does not appear to be any record of any marked catastrophe at that hour, that which is especially noticed and described by the Captain of the *Charles Bal* (in a letter published in *Nature* on the 6th December) having occurred at 11 h. 15 m.

The Calcutta curve shows the first transit of the wave in a very marked manner, *viz.*, beginning at 11 h. 54 min. A. M. (Cal. mean time). Now since the distance of Calcutta from Krakatoa measured on a great circle is 33° 11′ or 2290 statute miles, an impulse starting from Krakatoa at 9 h. 32 min. (L. T.), if travelling through an atmosphere at a temperature of 80° with the velocity of the sound wave, would reach Calcutta at 11 h. 21 min. (C. M. T.) If at the rate of 674 miles per hour, computed by General Strachey from the intervals of the successive transits of the East to West wave, it would reach Calcutta at 11 h. 48 min. (C. M. T.) which accorded very closely with the facts of the record.

The subsequent transits of the wave are not to be identified with certainty in the Calcutta time. The second transit of the S. E. to N. W. limb of the wave should occur about 0 h. 51 min. A. M. of the 29th but there is nothing very marked here on the trace. There is a disturbance nearly 4 hours earlier, *viz.*, at 8 h. 36 min. P. M. of the 28th and a less definite disturbance beginning at 4 h. 30 min. P. M. of the same day. If this latter is the transit of the N. W. to S. E. limb of the wave, this would be 32 h. 6 min. from its origin, having accomplished an arc of 326° 49′ = 22569 statute miles. At this rate it would complete its revolution in 35 h. 22 min. which agrees fairly with General Strachey's computed rate of progress for the West to East limb of the wave. It is not improbable that the great Himalayan barrier which must be passed by any wave sweeping from Krakatoa over Calcutta, or *vice versâ*, seriously interfered with the regular transmission of this portion of the wave.

Mr. ELIOT thought that the barometric traces were very interesting and afforded the clearest indication of the effect of the volcanic explosion at Krakatoa. The disturbance which gave rise to such a wave, which was propagated twice or thrice at least with visible effect on the barometric column round the earth, must have been an enormous one, and was probably the first outburst when the pent-up forces overcame the resistance of the crust of the earth at the point of eruption. There was one point to which Mr. Eliot wished to call attention, which was, that the velocity of propagation of a wave due to a great disturbance of the air was greater than that of an ordinary sound wave under similar conditions of temperature, &c. Hence the assumption that the velocity of

transmission of this wave was the same as that of sound would only lead to an approximate determination of the time of the great explosion at Krakatoa. If that could be determined exactly by the stoppage of some accurate clock in the immediate neighbourhood of the explosion, the observations of the time when the wave passed over different stations might be usefully employed to determine the rate of propagation of an atmospheric wave due to a very great disturbance. This might have a practical as well as a scientific value, as, for example, in the case of the propagation of a barometric fall due to the large atmospheric action over the central area of a cyclone, which would probably evidently be propagated in a similar way; or the sudden downrush of a mass of air, as perhaps occurs occasionally in nor'westers.

The REV. E. LAFONT, S. J. said that it would be interesting to know whether there were any data about the result of the meeting of the east and west parts of the waves. It was a matter of chance whether these would *interfere* or not: if they had met in the same phase, their coalescence might account for the triple recurrence of the barometric disturbance, which had been noticed with some surprise by the President.

Mr. H. RIVETT-CARNAC exhibited a Buddhist relic casket, containing gold ornaments and coins, dug out recently at Domangurh near Gorruckpore and read a paper on the same, which will be published in Part I of the Journal.

Dr. HOERNLE exhibited some original Persian letters addressed by Lord Cornwallis and others to one of the wives of the Emperor of Delhi at the end of last century.

The following papers were read—

1. *The Theory of the Winter Rains of Northern India.—By* H. F. BLANFORD, F. R. S. *Meteorological Reporter to the Government of India. (With Isobaric Charts).*

(Abstract.)

At first sight, the occurrence of rain in Northern India at the season when the N. E. or winter monsoon is at its height, seems to present a meteorological paradox. The well-known theory of the winter monsoon is that at that season the barometer stands highest in North Western India where the air is cold and dry, and lowest in the neighbourhood of the equator where it is warm and moist; and therefore, in accordance with elementary mechanical laws, the wind blows from the former to the latter. But the precipitation of rain requires that the air should

have an ascending movement, and this can take place only over a region of low barometer, towards which, therefore, the winds are pouring in. Hitherto no one has attempted the reconciliation of these apparently discrepant conditions.

Since the establishment of a Meteorological department under the Government of India has rendered it possible to study the weather of India as a whole from day to day, it has been my practice to investigate every case of cold weather rainfall in Northern India, amounting generally to three or four in each year, and although many important points still remain for elucidation, it is now at least possible to clear up many of the difficulties of the problem, and to reconcile the apparent inconsistencies.

The charts which accompany the paper show the distribution of atmospheric pressure and the prevalent winds in the four months of the cold weather. They exhibit many features in common. The region of highest barometer is in the Punjab and the Indus valley, and from this an axis or ridge of high pressure extends across Rajputana and Central India, having a trough of slightly lower pressure in the Gangetic plain and the Northern Punjab on the one hand, and a much lower pressure in the peninsula on the other. The winter monsoon blows around this region of high pressure in an anticyclonic curve, *i. e.*, in the direction of the watch-hands, but in the Punjab and the Gangetic plain there is but little movement of the air, the average rate being less than 2 miles an hour, and calms constitute about one-third of the observations. Also it is shown by the barometric registers of the Himalayan hill stations, that that distribution of pressure which, on the plains, causes the N. E. monsoon, does not exist and is even slightly reversed at an elevation of 7000 feet.

Hence in Northern India, the state of things which produces the winter monsoon is restricted to a small height, and is then only an average and not a permanent condition; and that which chiefly characterizes the atmosphere is its stillness; a condition in which any local action, small and feeble as it may be at first, may eventually set up a disturbance such as to revolutionize the existing conditions.

The cold weather rainfall is always the result of a local fall of the barometer, the formation of a barometric depression, which generally appears first in the Punjab or Western Rajputana, and then moves eastwards. Towards and around this depression the winds blow cyclonically (*i. e.*, against the direction of the clock-hands) and the winds from the South, coming up charged with vapour which they have collected from the warmer land surface of the peninsula and sometimes from the sea, discharge this as rain chiefly to the East and North of the barometric minimum where they form an ascending current.

Thus in the cold weather, rain generally begins in the Punjab and later on extends to the N.-W. Provinces, Behar and sometimes to Bengal. As the disturbance travels eastwards, it is followed up by a wave of high barometric pressure, and cool N. W. winds which usually last for a few days after the rain has cleared off.

The crucial point of the problem of the cold weather rains is, then, how to account for the formation of these occasional barometric depressions in a region where the barometer is generally high at this season. It has been suggested by one writer that they travel to us from the West across Afghanistan. This, however, can be only a guess in the dark, for at the time it was made, there were no observatories to the West of India nearer than Bushire, at the top of the Persian Gulf. There is one now at Quetta, and I have examined the registers of this observatory to see if they give any support to the idea, and find that, with the exception of two doubtful instances, they do not. I conclude therefore that in most cases, if not in all, these disturbances originate in India, and their cause is to be sought for in the meteorological conditions of Northern India itself. In some instances, they make their first appearance in Rajputana or Central India, and there can then be no question whatever of their purely local origin.

Now the region over which the winter rains are more or less regularly recurrent coincides with that in which the relative humidity of the air at this season, instead of diminishing towards the interior of the country, increases with the increasing distance from the coast. In any month between March and December, as we proceed from the coast of Bengal towards the Upper Provinces, the air becomes drier and drier, not only as containing an absolutely smaller quantity of water vapour, but also in virtue of its increased capacity for taking up vapour, owing to its higher temperature. But from December to March, the dryness increases inland only as far as Behar. Beyond this, although the quantity of vapour in the air remains very nearly the same or even undergoes a slight diminution, in virtue of the increasing cold, there is an approach to that temperature at which this small quantity of vapour would begin to condense, forming cloud or fog; and it is in the Punjab that, in this sense, the air is most damp. The result is that which our registers show to be the case, *viz.*, that from December to March it is also the most cloudy province. This seems to depend very much on the stillness of the air. The vapour that is always being given off from the earth's surface diffuses gradually upwards in the still atmosphere and soon reaches such an elevation that it begins to condense as cloud. When once a moderately thick bank of cloud is thus formed, the equilibrium of the atmosphere is speedily disturbed. It is well known as a fact from Glaisher's balloon

observations and is also a consequence of the dynamic theory of heat, that the vertical decrease of temperature in a cloud-laden atmosphere is much slower (about one-third) than that in a clear atmosphere. This initial disturbance will suffice then to cause an indraught of air from around, an ascending current is set up, the barometer falls; warm vapour-laden winds pour in from the South and we have all the conditions of the winter rains.

If this view be just, the stillness of the atmosphere combined with the pressure of a moderate evaporation must be accepted as the condition which primarily determines the formation of barometric minima and the winter rains of Northern India. And this stillness is obviously due to the existence of the lofty mountain ranges which surround Northern India, leaving free access to the plains open only to the South.

Were the Himalayan chain absent and replaced by an unbroken plain, stretching up to the Gobi desert, it is probable that the winter rains of Northern India would cease; any local evaporation in the Punjab and Gangetic valley would be swept away by strong dry north-east winds blowing from the seat of high pressure, which, in the winter months, lies in Central Asia, and instead of the mild weather and gentle breezes, which now prevail at that season on the Arabian Sea, it would be the theatre of a boisterous and even stormy monsoon, such as is its local equivalent of the China Seas.

Mr. ELIOT thought that Mr. Blanford's paper was a most valuable one. It dealt with a subject of the greatest interest to Indian meteorologists. It was moreover one of very considerable difficulty and on which opinions differed greatly. The winter rains in Northern India occurred under entirely opposite conditions to those of the summer or south-west monsoon rains where the lower air current was a sea-current charged with moisture. The winter rains occur during a period when the lower air currents are land winds, and very dry—and advancing from a region of low temperature to one of higher temperature. The rain accompanies disturbances the conditions and features of which are very clearly and fully stated by Mr. Blanford. He points out that Mr. Chambers, Meteorological Reporter to the Government of Bombay, has asserted that these disturbances are due to the passage of barometric depressions from Beluchistan and Afghanistan, and shows that this is in the majority, if not all the instances, not the case. Mr. Blanford's evidence establishing that they originate in India is a very valuable point gained, as it localizes the whole phenomenon. Mr. Eliot was not quite certain whether the upper atmospheric current might not have more to do with the phenomena than appeared from the *resumé* of the paper. He looked forward with much interest to the publication of the complete

paper in the Society's Journal, and felt sure that he expressed the opinions of the Society in thanking Mr. Blanford for his valuable paper.

2. *On a silver coin of Dáwar Bakhsh.*—*By* J. G. DELMERICK.

Jahángir died near Rajor in Kashmir territory on the 28th Safar A. H. 1037, A. D. 29th October 1627. Asaf Khán, the brother of Nur Jahán, and father-in-law of Shah Jahán, in order to prevent disturbances, immediately proclaimed as Emperor Dáwar Bakhsh, also called Buláqi, who was a son of Sultan Khusrau, the eldest son of Jahángir.

The Khutba was read in the name of Dáwar Bakhsh, at Bhimbar, but Asaf Khán at the same time despatched a swift runner to Sháh Jahán with his own signet ring as an assurance of the truth of the message that Jahángir was dead, and that orders were required how to act.

The runner found him in twenty days, it is said, at Junir near Bombay!

Sháh Jahán sent a firman to Asaf Khán to kill Dáwar Bakhsh, Shahriyár the brother of Khusrau, and the sons of Dániyál.

Accordingly after the proclamation at Lahore of Sháh Jahán as Emperor on the 2nd Jamadi-ul-awwal A. H. 1037, A. D. 28th November 1627, Dáwar Bakhsh with his brother Garshásp, Shahriyár the brother of Khusrau, and Tahmuras and Hosháng the sons of Prince Daniyál were all put to death on the 26th Jamádi-ul-awwal A. H. 1037 or A. D. 24th December 1627.

Elphinstone in a footnote at page 503 of his History of India states on the authority of Olearius that Dáwar *Shikoh*, also called Bulaqi, who had been set up for King by 'Asaf Khán, found means to escape to Persia where he was afterwards seen by the Holstein Ambassadors in 1633; but the man seen in Persia was very probably an impostor, as all our Muhammadan historians agree in asserting that the real Dáwar Bakhsh was executed at Lahore by the order of Sháh Jahán.

A coin of Dáwar Bakhsh, the puppet of 'Asaf Khán, whose nominal reign lasted for exactly one month, is in the possession of Pandit Rattan Naráin, the Nazir of the Deputy Commissioner's Court at Delhi, and I send you a drawing and description of it.

The Kalimah was removed from the coins of Akbar about A. H. 991, and Jahángir seldom used it on any of his coins, but no sooner was Jahángir dead than it was formally resumed by Dáwar Bakhsh, whose coin moreover appears to have been used as an exemplar for the coins of his uncle and successor Sháh Jahán.

Silver-weight 176 grs. Unique. A. H. 1037.

ابو المظفر داورىخش بادشاه احد	The Kalimah. ضرب لاهور ۱۰۳۷

3. *On some more copper coins of Akbar.*—*By* CHARLES J. RODGERS.

(Abstract.)

This paper is a continuation of one on the copper coins of Akbar written by Mr. Rodgers in 1881. The following coins of Akbar have been described in these two papers:—the one tánke, the two tánke, the one tánke, the damrí, the damrá, the futús, the mohur, the tankah, the half tankah, the quarter tankah, the one-eighth of a tanka, the one-sixteenth of a tanka, and the nisfe. Mr. Rodgers quotes a letter from General Cunningham in which General Cunningham shows that Akbar's revenue could not have exceeded 16 crores, taking Nizám-ud-din's murádé tankas to be the same as the common dáms of Akbar.

This paper will be published in the Journal, Pt. I.

4. *Notes on some Coins found in Omercote, Sind, similar to those styled "Gadhia ka paisa."*—*By* E. LEGGETT.

(Abstract.)

Though numbers of coins of the class dealt with in Mr. Leggett's paper have for years past been found in large numbers throughout Gujarat, Malwa and Kathiawád, they still remain practically unidentified. The latest endeavour to assign them a place in numismatic chronology appears to have been made by Pandit Bhagvanlal Indraji in Vol. XII of the Bombay Asiatic Society's Journal. The Pandit concludes that these coins belong to the Chalukyan dynasty, between the years 600 and 800 A. D., and the supposed origin of the Gadhia design is established by shewing the gradual change of the Persian head on the obverse and the fire altar on the reverse of the Sassanians into the oblong button and the series of dots and lines found on the Gadhia coins. Mr. Leggett in his paper, however, endeavours to refute the prevailing ideas on the subject of these coins, *viz.*, that they are Gadhia coins, that the figure on the obverse is a debased imitation of the Persian head, that the lines on the reverse represent the Sassanian fire altar and that they belong to the Chalukyan dynasty. In April 1882, 472 coins of this class were found by some convicts in an old burial-ground near the Pooran Bhora in Umarkoṭe. Mr. Leggett was enabled to purchase these coins from Government and on a careful examination of the various types included in the collection came to the opinion that the signs and symbols on them were of a purely Buddhistic character. All numismatists treating of these coins have cited Mr.

Prinsep as their authority for designating them Gadhias, but Mr. Leggett points out that in a later note Mr. Prinsep acknowledges himself in error in making this statement. In comparing a large number of the coins with each other Mr. Leggett thinks he distinguishes the following signs on them, all of which are Buddhistic:—The star and crescent over the head (which Mr. Leggett takes to be a rude representation of a Buddh or Hindu image) implying eternity, a triglyph on each side representing potentiality, with three straight lines under each, meaning God, the Law and Congregation, and a snake on either side of the head facing it, signifying adoration or protection. There is a short straight line at the back of the head which Mr. Leggett cannot interpret. On the reverse there are 10 dots or glyphs forming a pyramid flanked on either side by a curved line which forms the *chetya* or small Pagoda in which are deposited the reliques of Buddha. On the top of this the shaft of the umbrella is fixed. On the right of the shaft is the crescent and on the left are seen 7 dots in a circle with one in the centre, representing either the sun or the wheel of prayer. Below this and also the crescent are 7 other dots irregularly placed, the number and position of these dots being maintained throughout the series. Mr. Leggett concludes by making the suggestion that these coins may belong to one of the numerous clans who claim to be descended from Buddha.

This paper will be published in the Journal, Pt. I.

Mr. GIBBS remarked—I have known these coins for many years and have had from time to time very many specimens pass through my hands. There are two sorts both represented here: Nos. 5, 8, 11, 29, are specimens of those which are flat, thinner and more irregular in shape. Nos. 1, 2, 3, 7 and 14 among others are of the more ordinary round and dumpy description, the former have the head in less relief and less rudely formed than the latter and the reverse varies a little having fewer dots and lines about it. I have always looked on these coins as a debased edition of an earlier and better sort. I formed this opinion after examining many, and I was led to look for what I may call the 'missing link' which would join them on to those of which they were a base imitation and these I expected would prove to be of the Sassanian type.

I had once in my possession some 5 or 6 tetradrachms of Euthudemos, each more debased than the others and at last terminating in one which had a horrid hobgoblin sort of head—and on the *reverse* Hercules was composed of lines and dots something like what children draw on their slates to represent a man.

I now produce to the meeting a coin which I procured some years ago, which I thought would very nearly form the required missing link. It will be seen that the head is nearly as rude as those of the flatter sort in Mr. Leggett's collection, while the *Rev.* has a rather more clear

delineation of the Sassanian Altar: only one of the attendants is represented, that on the right side (to the observer): the figure consists of little more than 2 perpendicular lines with a line sloping across them and another at an angle of about 120° to form an arm with a sword, and then 3 dots to form the body and head, then another dot above, and the top of the altar is composed of 3, 2 and 1 dots: a crescent is on the right top. The coin is much rubbed and badly struck—but I think it worthy of consideration as to whether it does not confirm the earlier views of Prinsep and others that these coins are of Sassanian origin.

The name 'Gudhya siká' is given to nearly all small coins dug up in Cutch or Kattrum, and I have had the ass's head on them pointed out to me over and over again, but of course it was only the exaggerated forehead and cheek of the head on the *Obv.* Lieut. Postans' coins being square were either, I think, some of the bilingual small copper coins which belonged to the later Kings of the successors of Alexander or some of the earlier Hindu coins on which were rudely impressed an Elephant, a Bull or a Horse.

In the Sassanian series the *Reverse* which contains the altar frequently has the flames represented by a pyramid of 4, 3, 2 and 1 dots, while a star on the left and the crescent on the right of the flames appear in almost all. On some of them the base of the altar bears the sign ✕ which in these coins is made with a sort of St. Andrew's cross with an upright through the centre ✳ and forms the centre support between the base and the top: while the dress on the Sassanian coins is often ornamented with rows of jewels in lines or curves of dots.

I regret I have no Sassanian coin here with me but the plates in Marsden and Thomas will show what I mean.

Mr. Leggett makes a great point of the two S-like marks on the coins and confidently puts then down as Serpents, objecting to Pundit Bhugwanlal's proposal that the one which alone was visible on the coins he had was the fold of the garment round the shoulders, and lays great stress on there being two such marks on some of the coins he exhibits. Now a reference to Pl. V. of Thomas's 'Sassanians in Persia,' Nos. 8 and 9, (coins of Feroz) will show clearly what the snake-like mark is intended to represent. In those coins there is on each side of the head a double twisted ornament like an S, on the top of which are placed 3 lines: it is hard from the coins to know what these are intended for, but on examining more closely the woodcut of the Royal seal of Varahran, the 4th on page 11, it would appear that to each shoulder was attached a bell and chain, and this on the seal and coins is represented as turned mouth upwards as if being swung by the movement of the body. This is evidently the origin of the "Snake" on the Gadya coins.

The later Sassanian coins have the legends very imperfect, *e. g.*, Pl.

VI. Nos. 6 and 7 *rev.* (Hormaz IV and V) where the letters are little more than lines, while in No. 6 the attendants on the *rev.* are little more than perpendicular saw-edged lines which would in a further stage of debasement have easily taken the form of lines of dots: while the form of the altar in Pl. VII, Nos. 2, 3, 4, 8, and 9 (Adrasher II and Varahran V) shows how easily it could degenerate into the series of lines which appear on Mr. Leggett's coins.

The more I examine them and compare them with the Sassanian the stronger is my opinion that Prinsep's suggestion was, like most of his suggestions, right, and that it has been confirmed by subsequent investigation.

We are, however, much indebted to Mr. Leggett for his carefully worked-out paper on a series of coins which have been so little noticed, and it will I trust lead others, and more experienced numismatists on this branch than myself, to discuss the subject.

5. *On Ramtinkis.—By the* HON'BLE J. GIBBS, C. S. I., C. I. E.

Mr. Gibbs referred to what he had said on a previous occasion (Proceedings for 1883) regarding those curious medals known as Ramtinkis, and now gave a minute description of 14 medals which had come before him and some of which have been photographed by the autotype process and will form the subject of a plate in the forthcoming Journal for this year in which the paper will appear. Mr. Gibbs stated that further inquiry led him to the opinion that these were medals and not coins, and were struck for religious purposes alone.

Mr. H. RIVETT-CARNAC said he had one or two of these in his collection, and the information obtained respecting them coincided with the views expressed by Mr. Gibbs. Some of those in his Cabinet shewed strings of small figures, suggesting they were not coins, which would bear the portrait of the reigning monarch, but tokens or medals used on the occasion of pilgrimages or religious ceremonies.

LIBRARY.

The following additions have been made to the Library since the Meeting held in February last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 5.
Baltimore. Johns Hopkins University,—Circulars, Vol. III, No. 28.

Bombay. Bombay Branch of the Royal Asiatic Society,—Journal, Vol. XVI, No. 42.

———. Indian Antiquary,—Vol. XIII, Part 153, February, 1884.

Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 2, 1884.

Calcutta. Asiatic Researches, Popular Edition,—Vol. I, No. 1.

———. Geological Survey of India,—Memoirs, Palæontologia Indica, Series XIV, Vol. I, Part 4.

———. ———. Records,—Vol. XVII, Part 1.

———. Original Meteorological Observations,—August, 1883.

Frankfurt. Senckenbergische Naturforschende Gesellschaft,—Bericht, 1882-83.

Lahore. Anjuman-i-Punjab,—Journal, Vol. IV, Nos. 6-8.

Liége. Société Géologique,—Annales, Vol. IX.

London. Academy,—Nos. 611-614, 1884.

———. Athenæum,—Nos. 2934-2937, 1884.

———. Nature,—Vol. XXIX, Nos. 742-745.

Paris. Le Bureau des Longitudes,—Annuaire, 1884.

———. Société de Géographie,—Compte Rendu des Séances, No. 2, 1884.

Pisa. Societá Toscana di Scienzé Naturali,—Atti, Processi Verbali, Vol. IV, pages 1-27.

Rome. Societá degli Spettroscopisti Italiani,—Memorie, Vol. XII, Nos. 11-12, November and December, 1883.

St. Petersburgh. Russian Geographical Society,—Investiga, Vol. XIX, No. 4.

Vienna. Ornithologische Verein,—Mittheilungen, Vol. VIII, No. 1.

Yokohama. Asiatic Society of Japan,—Transactions, Vols. XI, Parts 1-2; XII, 1.

Zagreb. Arkeologickoga Druztva,—Viestnik, Vol. VI, No. 1.

Books and Pamphlets,

presented by the Authors.

Duthie, J. F. and Fuller, J. B. Field and Garden Crops of the North-Western Provinces and Oudh, Part II. 4to. Roorkee, 1883.

Gowan, Major W. E. Alphabetical Index to C. Marvin's works, &c. No. III. 8vo. Calcutta, 1884.

Peacock, R. A. Saturated steam the motive Power in Volcanoes and Earthquakes; great importance of Electricity. 8vo. London, 1882.

Swinton, A. H. Data obtained from Solar Physics and Earthquake commotions, applied to Locust Multiplication and Migration. 8vo. 1883. Pam.

Thomas, Edw. The Coins of the Andhras. 4to. London, Pam.

MISCELLANEOUS PRESENTATIONS.

Report on the Administration of Bengal, 1882-83, Fcp., Calcutta, 1884.

BENGAL GOVERNMENT.

Catalogue of Oriental coins in the British Museum, Vol. VIII, 8vo. London, 1883.

BRITISH MUSEUM, LONDON.

Review of the Administration of the Land Revenue Department of the Central Provinces, for the year ending 30th September 1883. Fcp. Nagpur.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Second Report of the Curator of Ancient Monuments in India, for 1882-83. 8vo. Calcutta, 1883.

CURATOR OF ANCIENT MOVEMENTS IN INDIA.

Statistical, Descriptive and Historical Account of the North-Western Provinces of India, Vol. IX, Part I, Shájahánpur, by F. H. Fisher. 8vo. Allahabad, 1883.

GOVERNMENT N.-W. PROVINCES.

Report on the Administration of the Madras Presidency, 1882-83. Fcp. Madras, 1883.

MADRAS GOVERNMENT.

Administration Report of the Meteorological Reporter to the Government of Madras, for the year 1882-83. 8vo. Madras, 1883.

METEOR. REPORTER TO THE GOVERNMENT OF MADRAS.

Report on the Administration of the Punjab and its Dependencies for 1882-83. Fep. Lahore, 1884.

PUNJAB GOVERNMENT.

Nineteenth Annual Report of the Sanitary Commissioner with the Government of India, 1882. Fcp. Calcutta, 1883.

SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA.

St. Xavier's College Observatory,—Observations for July to December 1883. Sheet, Calcutta, 1884.

ST. XAVIER'S COLLEGE OBSERVATORY.

PERIODICALS PURCHASED.

Berlin. Journal fúr die reine und angewandte Mathematik,—Vol. XCV, No. 3.

Calcutta. Indian Medical Gazette,—Vol. XIX, No. 2.

Góttingen. Gelehrte Anzeigen,—No. 2, 1884.

————. Nachrichten,—Nos. 13, 1883; 1, 1884.

Leipzig. Annalen der Physik und Chemie,—Vol. XXI, No. 1.

———. ————. Beiblätter, Vol. VIII, No. 1.

London. Chemical News,—Vol. XLIX, Nos. 1260-1263.
———. Publishers' Circular,—Vol. XLVII, Nos. 1112-1113.
———. Society of Arts,—Journal, Vol. XXXII, Nos. 1626-1629.
Paris. Annales de Chimie et de Physique,—Vol. XXX, November and December, 1883.
———. Académie des Sciences,—Comptes Rendus des Séances,—Vol. XCVIII, Nos. 1-4.
———. Revue Critique,—Vol. XVII, Nos 3-6.
———. Revue des Deux Mondes,—Vol. LXI, Nos. 2-3.
———. Revue Scientifique,—Vol. XXXIII, Nos. 2-6.
———. Journal des Savants,—January to December, 1883; January, 1884.
Roorkee. Indian Forester, Vol. X, No. 2, February 1884.

Books Purchased.

Asiatic Researches. Popular Edition, Vol. I, No. I, 8vo. Calcutta, 1884.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR APRIL, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd April, 1884, at 9.30 P. M.

H. F. BLANFORD, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced :—

1. From the Colonial Secretary, Colombo,—Ancient Inscriptions in Ceylon, Text and Plates, by Dr. Ed. Müller.

2. From the Superintendent, Geological Survey of India,—(1.) Popular Guide to the Geological Collections in the Indian Museum, by F. R. Mallet, F. G. S; (2.) Descriptive Catalogue of the Collection of Minerals in the Geological Museum, by F. R. Mallet, F. G. S.

3. From the Home Department, Forest Branch,—List of Publications and Maps relating to Forest Administration in India.

4. From the Authors,—(1.) Annales du Musée Guimet, Vol. VI, by Ph. Ed. Foucaux; (2.) Lecture on Freemasonry, by N. C. Bural; (3.) Meteorological Observations in Zanzibar in 1880-81, by Surgeon-Major C. T. Peters.

5. From the Director of Instruction and Industry, Batavia,—Topographische en Geologische Beschrijving van een Gedeelte van Sumatra's Westkust, with Plates, by R. D. M. Verbeek.

6. From the Geological Survey of Canada,—Catalogue of Canadian Plants, Part I, by John Macoun, M. A.

7. From the Chief Commissioner, Central Provinces,—Report and Return on Arboricultural operations in the Central Provinces in 1882-83.

8. From the Curator, Government Central Book Depôt, Bombay,—List of Sanskrit MSS. collected for the Government of Bombay in 1879-80 and 1881-82.

9. From the Government, North-Western Provinces,—Statistical, Descriptive and Historical account of the N.-W. Provinces of India, Vol. XIII, Part I. (Azamgahr).

10. From Major-General G. G. Pearse,—Electrotype of a Hindu Royal seal found in Java.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members:

1. John Parry Scotland, Esq., C. E.
2. Edmund F. Mondy, Esq., F. C. S.
3. Major H. Cole, R. E., A. R. S. M.

The following gentlemen are candidates for election at the next meeting:

1. W. C. Taylor, Esq., Settlement Officer, Khunda, Orissa, proposed by L. de Nicéville, Esq., seconded by Dr. H. W. M'Cann.
2. Syud Hussen, B. A., Secretary to the Nizam of Hyderabad's Council, proposed by the Hon'ble Amir Ali, seconded by Dr. A. F. R Hoernle.
3. Prince Iskunder Ali Mirza, son of the Nawab Nazim of Murshedabad, proposed by the Hon. Amir Ali, seconded by Dr. A. F. R. Hoernle.

The SECRETARY reported that the following gentlemen had intimated their desire to withdraw from the Society:

Lieut-General J. T. Walker.
Hon'ble J. O'Kinealy.

The SECRETARY reported that the Nawab Nazim of Murshedabad, elected an Ordinary Member at the last meeting, had compounded for the payment of all future subscriptions as a non-Resident Member by a remittance of Rs. 300.

The following letter was read from Major-General G. G. Pearse on an ancient gold ring bearing an inscription:

"At the late Universal Exhibition held at Amsterdam, I observed a remarkable monument of ancient Hindu art, *viz.*, a solid gold ring, weighing about 5 sovereigns of gold, of this shape and size.

"It is the property of Monsieur Van Sansberge, Ex-Governor-General of Netherlands India. He informs me that it was found inside a stone casket which contained many precious objects, together with the ashes

of the deceased. The casket was found in one of the ancient Hindu tombs of Java, and was that of a Prince of Madura, ancestor of the subsequent Sultans of the Island.

"Monsieur Van Sansberge considers the ring almost too small to be worn. He gives its weight as 0·175 of the continental system.

"He has kindly given me impressions of the seal, which I have had electrotyped by Mr. W. T. Ready of the British Museum: one of these I beg to present to the Bengal Asiatic Society. I trust some of its distinguished scholarly members may be able to read the inscription and fling light on it, giving from its form and style of epigraphy its date, &c.

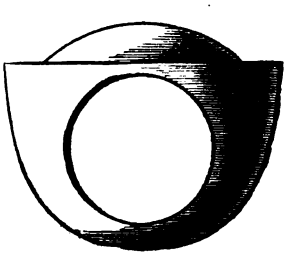
"Having now for nearly 40 years collected ancient Indian seals and rings, I may remark that this grand old style of ring is very rare indeed. I have only seen two others of the same size and significance: these were found in 1866 at Rungamutty on the River Bhagarutty in the District of Moorshedabad by E. M. Jackson, Esq., of Cheltenham, in whose possession I saw them a few years ago; they were found in an earthen jar, together with two gold coins of Oerkes and Kanerkes in a ruined and deserted Fort near Rungamutty. In lieu of a Sanskrit inscription, as on Monsieur Van Sansberge's signet ring, Mr. Jackson's had on one a sapphire and on the other a sard. The stones were polished and shaped but not cut. Thus on these two superb rings of the Indo-Scythic period there was no inscription and no seal. They were thus only ornamental rings.

"I possess in my collection several rings with antique gems dating up to the Alexandrian age, in their original settings of gold, steel, iron, brass, &c. Also solid gold, steel, iron, brass, chalcedony, agate and jade rings, either inscribed with characters in some one of the ancient Indian languages, or else having on them figures and symbols: many being those of the Aśoka age. But I have never had the opportunity of acquiring a superb ring of the kind here brought to notice.

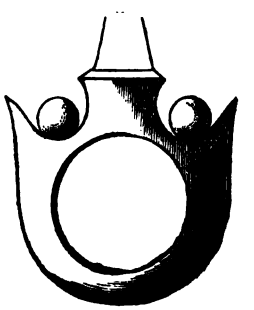
"Many of my ancient Indian rings of times previous to and a little subsequent to the Christian era are, as it were, miniatures of the grand ring under notice, being generally somewhat of the same shape and style, but such are poor things compared to the Indo-Javanese ring under consideration.

"I herewith also give the size and shape of Mr. Jackson's two superb rings which were found in Bengal.

1. A Sard.



2. A Sapphire.



"I am unfortunately separated from my Cabinet of antique gems, and thus unable to forward any of my ancient Indian rings, to be figured as illustrative types for age and style.

"I trust any of our learned members, who have it in their power to fling further light and knowledge on this interesting subject, may be pleased to do so.

"This style of ring is very truly pure ancient Hindu Indian: for in the great Oxus hoard and find, submerged about two centuries B. C. and but lately discovered, though several rings were found in it originating from various parts of higher and Central Asia, none, as far as I know, have the grand size and peculiar shape of these old Hindu rings, now brought to notice.

"I may mention that when Mr. Jackson's rings and coins were found in 1866 at Rungamutty, there was also found with them a magnificent oval seal of solid gold 2 inches by $1\frac{1}{2}$. This the finder melted down."

The following letter was read from Mr. A. M. Markham, dated Banda, 19th March, 1884, enclosing a rough squeeze and a pencil copy of a Pali Inscription discovered by him on one of the stone posts of the Panna Gate of Kálinjar Fort:

"I enclose rough squeeze and a pencil copy of a Pali Inscription which I discovered on one of the stone posts of the Panna Gate of Kálinjar Fort during a visit there in January last.

The stone bears numerous Sanskrit inscriptions, mostly of date 1600 *Samvat*, which have all been published by Maisey and others. But this Pali one has not, I think, been hitherto noticed. The stone is almost a palimpsest, as far as this rude inscription is concerned, and with the poor appliances at my hand at the moment, I could not get anything better than I send you. I had hoped to have been able to pay another visit to the place and get a rubbing, but I have not been able to do so.

I do not know whether you have still the advantage of Dr. Hoernle's presence; but if so, no doubt he will be able to decipher the inscription; or, if not, you will know of some one who can. It may well prove to be of no value; or that a principal part of it has disappeared under more recent inscriptions, themselves some $3\frac{1}{4}$ centuries old!

I do not think that General Cunningham's searchers saw this inscription on his recent visit to Kálinjar.

Dr. HOERNLE stated that he had examined the inscription but found it totally unintelligible.

The following papers were read—

1. *On the Psychological Tenets of the Vaishnavas.*—*By* DR. RA'JENDRA-LA'LA MITRA.

(Abstract.)

The object of the paper is twofold: 1st, to give a succinct account of the various psychological tenets current among Indian philosophers; 2nd, to supply a brief analysis of a Sanskrit tract in which an attempt has been made to reconcile the opinions of the several schools of Vaishṇavas so as to make them all subservient to the doctrine of emancipation by faith, and faith only. The psychological tenets are grouped under three heads: 1st, Nihilistic, 2nd, Monistic, 3rd, Dualistic. The first is represented by those who do not believe in the existence of a soul apart from the body. They hold that life and consciousness are dependent on organization, and cease on the complete ataxy of that organization. They are all atheists. The second class is divisible into two orders. The first order includes those who believe that every living being has a soul, that as the souls of living beings are identically the same they constitute one genus, and that apart from these individual souls there is no separate Supreme or Divine soul. The second order is represented by those who hold that there is only one soul and that the Divine, besides which there is no other soul. The latter is divided into 4 groups according as the individual soul is believed to be all-pervading (pantheistic), a reflection, a spark or a subordinate particle of the Divine one. The third head represents the class which recognises the existence of both the Divine and individual souls. The Vaishṇavas follow either the tenet of the last class or that of one of the last three subdivisions of the second class, and the object of the work noticed is to reconcile the differences of these tenets. The work likewise explains how the unconditioned Divine Soul becomes conditioned and appears in incarnations.

The paper will be published in Part I of the Journal for 1884.

The Rev. C. H. A. Dall said that, among the ancient Oriental speculations presented by Dr. Mitra, one statement had an important bearing on modern life. It was his elucidation of the use and meaning of the Sanscrit phrase *Ekamevádvitíyam.* These three words, *ekam eva advitíyam*, "one verily secondless," were now widely accepted as declaring that "God is one, and without a second." Without denying the henotheism of the Veda or a suggested monotheism, Dr. Mitra has just shown us the origin of the three words. In so doing, he shows that the rendering 'God is One and without a second' is not their fair equivalent.

If this be so, his declaration touches the very axiom and groundtruth of religious enterprise and social movement in this country, which legislation has recognised, and which is attracting attention in Europe and America. This movement of "The Brahmo Somaj" is traceable to English education and Christian books; or to the meeting of the intelligent West with the worshipping East. It seems likely to live and grow in

India wherever, and as long as, English education thrives among the Hindus. *Ekamevádvitíyam* is the banner-cry of the Brahmos everywhere, against idolatry and polytheism; its *in hoc signo vinces*. Dr. Mitra's is not the first exposition we have had of the source of this motto in the Shastras, and of its precise meaning therein. It need hardly be said that the three words occur more than once in the Hindu scriptures. Some years ago Dr. Krishna Mohun Banerjee, dealing with the words as a Christian scholar, showed that, in the instance he referred to, the speaker of them was replying to Gargi, a female disciple, concerning the cosmos or visible universe; and was not speaking of God. The teacher said to the learner "This, oh Gargi, (this world, this cosmos,) now so manifold, was once, in the beginning *ekam evádvitíyam*, a monad, a germ unmanifested, one single unit." Such, in substance was the rendering of the words by the Rev. K. M. Banerji; at least as memory gave it to the speaker.

Now we have this view confirmed by Dr. Rajendralála Mitra; at least so far as concerns the use of the word "God" in this connection. Dr. Mitra says that in the three schools of Hindu philosophy, the Monists, the Dualists and the Agnostics,—all the Monists (with Sankarácháryya) cry out, as against the Dualists,—there is one essence, one existence, one substance, only one, *ekam evádavitíyam*.

To be sure, Dr. Mitra has given four groups of Monists. Of these, the first group only believe in pantheism, pure and simple, and that all is spirit, one single soul. The second class see, in man, a shadow of that soul. The third count man to be a spark of the Over-soul, something more substantial than a shadow. And the fourth—(with Chaitanya)—regard man as a particle slightly inferior to the One;—thus coming very near to the Dualists and the recognition of individual souls.

Of the above, the third and fourth groups are mostly anchorites, while the second are voluptuaries, says Dr. Mitra. So that these theorisings do not rest in the abstract but are moulding character. The single point, however, to which the speaker would call attention was that we have both Christian and Hindu scholars, uniting to tell the Brahmos to look elsewhere for the declared unity of God, than to their present motto *Ekamevádvitíyam*, one soul exists and nothing else; no human soul exists. Good cannot come of mistranslations.

It is but fair to the Brahmo Somaj to say that from the very beginning of their movement in Calcutta, in 1831, they have rested, not on the passages quoted by Dr. Mitra and Dr. Banerji, but on the use of *Ekamevádvitíyam* in the Udyoga Parva section of the Mahabhárata, where a Bráhman says, "Oh King, the One without a second, whom thou dost not know, truly He is the step to heaven and the ship to cross the sea."

(8.) Táj-ud-Dín.

2. *On some coins from Candahar.*—*By* CHARLES J. RODGERS. (Vide Plate I).

The coins drawn in the accompanying plate were obtained by me some time ago from Kandahar. The find consisted chiefly of the coins of five kings. In silver there were over twenty coins of Mangú Khán and several coins of Ismael Súfi, the founder of the Súfi dynasty of Persia. (These I have not drawn as they were very fine indeed and exceedingly intricate). In mixed metal there was a great quantity of the coins of a king but little known to History, *Táj-ud-Dín Muhammad Hardufi* or *Harúfi* or *Khardufi*, several of one equally little known, *Harb*, and one coin of *Taj-ud-Dín Nasr bin Bahrám Sháh*. As several of the coins of Mangú Khán bore the mints of *Nímroz* and *Herát* and *Ġazní*, and as several of those of Ismael bore the same mints *Nímroz* and *Herát*, I had no hesitation, as the coins came from Kandahár, in assigning them to kings who at some time or other ruled in South and Western Affghanistán. Of Mangú Khán there are several coins in the British Museum. Those in the Catalogue (Vol. VI, pp. 6, 7,) are, of silver four in number and one of copper. The only mint given is Tiflis. Last year I obtained one in Lahore struck (فی بلدة غذنه) in the town of Ġazni. This I sent to the British Museum. Hence I regard the present find as one of some importance especially as the coins reveal an altogether new mint, that of Nímroz. (It is نیمروز on the coins of Ismael and نیروز on those of Mangú Khán). The value of the find is still more enhanced when we consider that the British Museum possesses but eight coins of the great Qááns of Chinese Tartary (this number is increased now by two coins of Changez Khán which I gave to the British Museum) and that they have no coins of Nímroz and none of Táj-ud-Dín or Harf or Nasr bin Bahram Sháh. I was unable to say anything of these last three kings until my friend and fellow numismatist, L. White King, Esq., C. S. of Edwardsábád, wrote me that he had found them mentioned in the Táríkh i Jadwalia of Khádim Ali of Lucknow (Munshi Nawwab Kishore's Press, 1876). This history is nothing more than a collection of Tables of Kings, &c., obtained from 41 histories, the names of which the author gives in his short preface of two pages. The work is a good volume of 578 pages, but he only devotes two pages to the kings of Sístán or Nímroz. They are given as follows without date :—

(1.) Taj-ud-Dín Abul Fazl, son of Táhir.
(2.) Shams-ud-Dín Muhammad.
(3.) Táj-ud-Dín Harb, son of Azzul Mulk.
(4.) Bahrám Shah, Yamín-ud-Dín.

(5.) Nasras-ud-Dín (6.) Rukn ud Dín.

(7.) Shaháb-ud-Dín Muhammad, son of Táj-ud-Din Harb.
(8.) Táj-ud-Dín.

The 3rd king Táj-ud-Dín Harb is stated to have reigned 60 years. Now as all the coins of Harb, and Taj-ud-Dín and Nasr have the name of the Khalífah Násir-ud-Dín on them, we can pretty nearly assign them to Nos. 3, 5 and 8. It may be they are the coins of only 3 and 5. They must speak for themselves. If we had the title of No. 8 we should be at no loss. Khádim Alí says of No. 8 that he was besieged two years in the fort of Sístán by the Muguls, and that at the end of that time the Government of Nímroz passed into the hands of the rulers of Changez Khán. Now Násir-ud-Dín reigned from 575 to 622 A. H. So these kings must have reigned in that period. It is evident that the first Táj-ud-Dín is excluded from the present coins by the 60 years of Harb. Changez Khán died in 624 A. H. So, if the Táj-ud-Dín is not Harb, it follows that the coins of which we have the greater number must be those of No. 8. As the coins of Harb are much worn and the coins of Táj-ud-Din are all nearly new, as if fresh from the mint, I assign them to No. 8 and think they must have been buried during the siege of Sístán and only lately exhumed. If this assignment be correct then the title given to No. 8 of Harúfi or Khardufi is revealed by the coins. There is no mint on the coins of these three kings. But the coins of Harb have on their reverse the word قانون which may be a mint. Prinsep in his tables says it is the name of a Grecian or Syrian month. Mr. King says his Moulvie Ahmad Sháh tells him it is the name of a Turkish month.

As Nímroz came into the hands of Changez Khán at least two years before his death, it is just possible that coins Nos. 3 and 4 may be his. Under قاان عادل there is a word I cannot make out satisfactorily. It looks like لريعان. It may be كرعان. In either case I can ascribe no meaning to it. Nos. 1 and 2 are, however, undoubtedly coins of Mangú Khán and, as their style is so near that of Nos. 3 and 4, we may perhaps not be far wrong in ascribing the latter to Mangú Khán also, in which case the uncertain word may be a mint or the name of a ruler. I have not Mr. Howorth's valuable work at hand and so cannot see what he says of Nímroz in connection with the Muguls. The Tabqat i Násirí speaks of the Moguls in very strong language indeed.

I will now transcribe the inscriptions on the coins so far as I can decipher them. I may remind the reader that all are silver except the last three which are a mixture of copper and silver.

	Obverse.	*Reverse.*
1.	مونگکا قاان عادل ضرب نيمروز	(sic) لله محمد رسول لله
2.	do. do. name omitted.	do.
3.	قا ان عادل لريعان	do.
4.	do.	do.

	Obverse.	*Reverse.*
5.	مونگکا قا ان العادل	(part of) الدرهم بدارالضرب
6.	do. (parts of)	added هراة do.
7.	مونگا قاان	above هراة do.
8.	مونگا قاان	same as 6. هراة below.
9.	مونگکا قاان العاءل	do.
10.	منگو قاان margin illegible.	do. but with margin.
11.	مونگکا قاان العادل	parts of الا الله محمد رسول الله
12.	مونگکا قاان العادل الاعظم	same as 6.
13.	مونگکا قاان العادل غذنة	الدر هم بدار الضرب
14.	مونگکا العادل	parts of. الة الا الله محمد رسول الله
15.	same as 9.	same as 6.
16.	مونگکا قاان العادل	مونگکا قاان العادل
17.	مونگکا قاان العادل زيد	same as 5 with unintelligible additions.
18.	مونگکا قا ان العادل	do.
19.	مونگکا قاان العادل الاعظم	with additions بدارالضرب هراة
20.	Obv. In circle حرب round margin.	لا الة الا الله وحدة لاشريک له
	Rev. * ناصرلدين الله محمد (sic)	قانون لا الة الا الله محمد رسول الة
21.	Obv. in diamond lozenge محمد	تاج الدين حروفي (?)
	Rev. same as reverse of 20 but without	قانون
22.	Obv. in diamond lozenge	تاج الدين نصر بن بهرامشاة
	Rev. same as 21.	

It will be observed that the name of Mangú Khán, the name he is known by in all modern histories, is here spelt on the coins in three different ways, see Nos. 5, 7, 10. Nos. 1 and 2 give the mint Nímroz, the mint of 3 and 4 is uncertain, 5—10 give Herát. No. 13 gives Ġazní. Parts of the Kalimah come on Nos. 11 and 14, on the reverses. No. 16 has the name of the Khán on both sides. Nos. 12 and 19 have the two titles ul Ádil and ul Ázim. No. 17 has a name on it in addition *Zaid*. It may be this is the name of the mint-master or the die-sinker. Nos. 1—4 have an attempt at the Kalimah on their reverses. Nos. 21—23 have the whole of the Kalimah on their reverses together with the name of the Khalífah. The Moguls were regarded by the Muhammadans of India and Affghanistan with the greatest aversion and as utter infidels. Certainly, however, Changez Khán put the Khalífah's name on the reverse of his coins. And here we have Mangú Khán putting the Kalimah or parts of it on the reverse of his coins. He became a Musalmán as I shall show.

* British Museum Catalogue gives this name احمد.

Of Mangú Khán I have but little to say. He was the son of Túlúi who was the 4th son of Changez Khán. He ascended the throne in 646, was inaugurated in 649, and he died in 655 A. H. or 1257 A. D. His capital was Karakorum, north of the Gobi desert. He sent his brother Hulákú to conquer and rule Persia, where coins were struck bearing the name of Mangú as suzerain. The prolix author of the *Rauzat us Safá* gives several folio pages to Mangú, out of which we glean nothing of any historical value whatever. The coins of Mangú here depicted were evidently struck after the conquest of Affghanistán by the Moguls and before Hulákú's occupation of Persia. The author of the Tabqát i Nasírí uses strong language about the Moguls. Of Mangú's predecessor he says "when Kyúk had gone to hell," and again "the army of Mangú Khán and of Bátú attacked the army of the Moguls and sent ten thousand famous nobles to hell." It would seem that Minháj Suráj, the above mentioned author, travelled in Affghanistán and Nímroz in 621 A. H. He wrote a Tabqa on the Princes of Nímroz. But unfortunately this Tabqa is not edited in the abridgement published by the Society to which alone I have access. As the Editor, Major Nassau Lees, says there are but two known MSS. of the works, I am afraid I stand but little chance of extending my knowledge. However from the author's narrative of his journey it would seem that he came across a Táj-ud-Dín Niáltagín Khwárizmí in Sístán or Nímroz in 623 A. H.

Of Táj-ud-Dín Harb, Khádim Ali says he was a good man and reigned 60 years. In his time the towns of Khorasán were under the rule of Gaur. Of Nasr he says that he fought with his brother Rukn-ud-Dín. I have two other coins of Harb with what looks like the name of a Khalífah on them and with Harb's name in small letters. There is only the Kalimah on the reverse of these coins. The name of the Khalífah looks like *Ush Shalím billah.* It has over it *Muhammad* and under it *Harb.* I know no Khalifah of this name. One thing is certain—the rulers to whom these coins belonged were the masters of Nímroz before the time of Mangú Khán.

The date on the Nímroz coins of Ismael Súfi is not given: there is only a ٢ visible. On the Herat coins 927 A. H. is visible.

In looking over the abridgement of the Tabqát i Násirí, I find that Mangú Khán became a Muhammadan by repeating the Kalimah. It is interesting to see his coins confirm this fact. (See Tabqát, p. 411.)

The author of the Jadwalliya gives an amusing reason for the etymology of the word Nímroz. He says that Solomon was down in those parts. He found the country full of water and gave orders to the *devas* to fill it with sand: the work was performed in half a day. Hence the country was called by this name Nímroz, half the day.

The same author gives a second list of kings of Nímroz, Azz ud Dín Amr, Malik Rukn ud Dín, Shams ud Dín Kirat, Rukn-ud-Dín, Fakhr-ud-Dín, Gyás ud Dín, Shams ud Din, Malik Háfiz, Muizz-ud-Dín Husain, Gyás-ud-Dín Sher Alí. In the reign of this last king Taimúr came and took the kingdom. On the third of these, Shams-ud-Dín Kirat, Mangú Khán conferred Herát and Ġaur, probably through his governors, not in person. It is strange that Minháj Suráj in his account of Mangú Khán 646-55 A. H. introduces an account of his own journey in Western Affghanistan in 621-3 A. H. He mentions two Táj-ud-Dins, two Shams-ud-Dins, a Rukn-ud-Dín and a Shaháb, as rulers in different parts visited by him.

LIBRARY.

The following additions have been made to the Library since the Meeting held in March last.

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presented by the respective Societies and Editors.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR MAY, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th May, 1884, at 9·15 P. M.

D. WALDIE, Esq., F. C. S., Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Government, North-West Provinces,—Statistical, Descriptive and Historical account of the N.-W. P. of India, Vol. XIII, (Farukhabad and Agra) by E. T. Atkinson and F. H. Fisher.

2. From the Bengal Government,—(1) Returns of Rail Borne Traffic of Bengal, during quarter ending 31st December 1883; (2) Report on Municipal Taxation and Expenditure in the Lower Provinces of Bengal.

3. From the Zoological Record Association,—Zoological Record for 1882, by E. Caldwell.

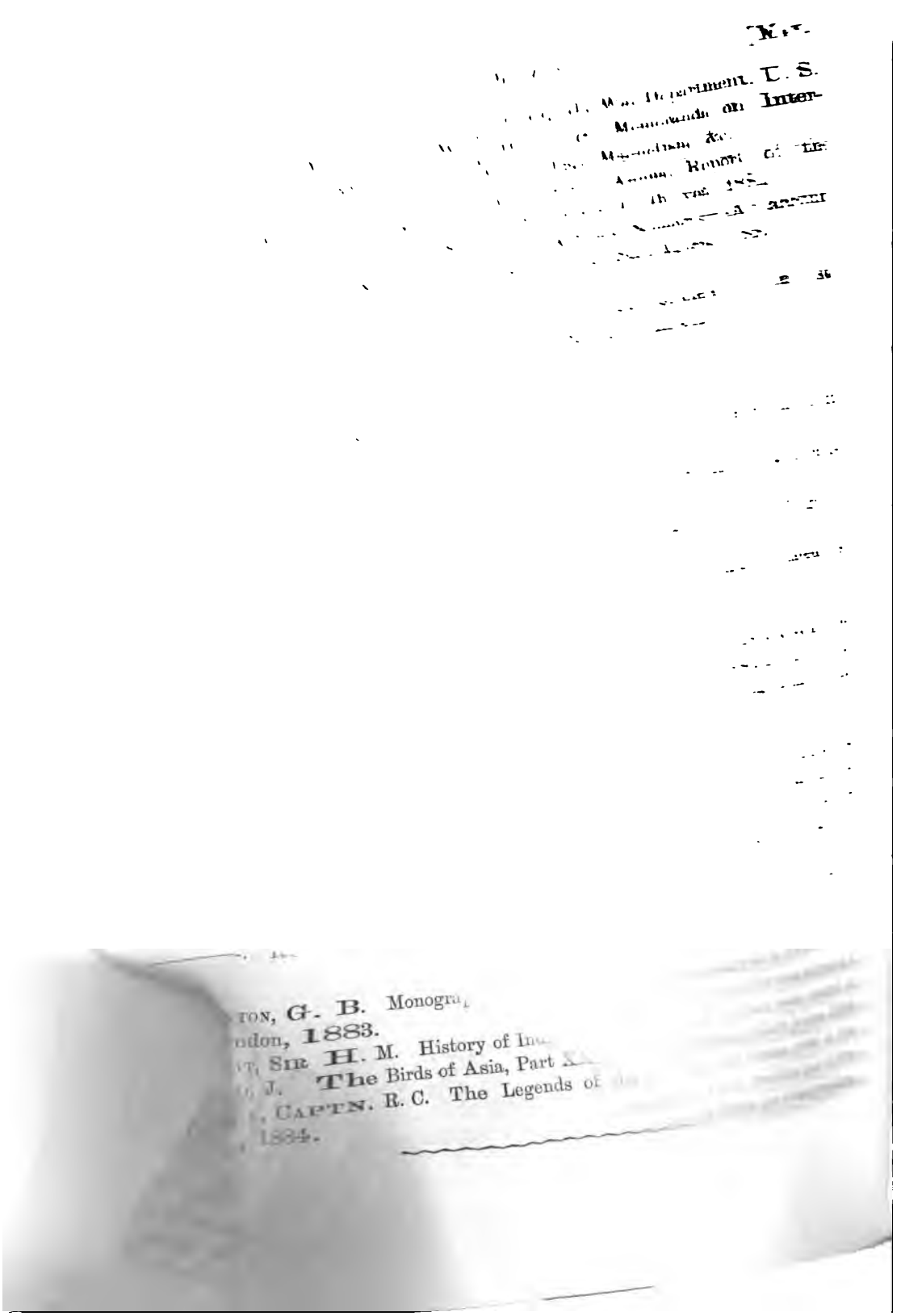
4. From the Geological Survey of India,—Memoirs of the Geological Survey of India, Ser. X, Vol. II, Pt. 6, by Dr. R. Lydekker.

5. From the Literary and Philosophical Society of Liverpool,—Proceedings of the Literary and Philosophical Society of Liverpool, Vols. XXXV, XXXVI and XXXVII.

6. From the Madras Government,—Annual Report, Madras Medical College, Session 1882-83.

7. From the Author, On the Discovery of the Periodic Law, and on the Relations among the Atomic Weights, by John A. R. Newlands, F. I. C., F. C. S.

8. From the Meteorological Reporter to the Government of India —(1) The use of the Spectroscope in Meteorological Observations, being



qui a été l'ancêtre et qui est restée le modèle de toutes les autres Sociétés Orientales. Je vous prie de croire, Mousieur le Président, que je suis profondément pénétré de ce sentiment.

Veuillez, je vous prie, Monsieur le Président, agréer l'expression de ma gratitude sincère et de mes sentiments bien respectueux.

EMILE SÉNART.

Prof. Ernst Hæckel writes:

"The Asiatic Society of Bengal has been pleased to render to me an extraordinary and most valuable honour, in conferring on me the degree of a Centenary Honorary Member of the Society. Amongst a great number of honorary distinctions, which have been conferred upon me during thirty years of scientific labour, I esteem this peculiar honour as one of the highest, and I hasten to express for it my most deep and sincere thanks. My pleasure in it has been so much the greater, as this distinction comes from the most distinct scientific body in Asia, in which I admire the highest development of Anglo-Saxon energy and scientific industry under the difficulties of tropical life.

"I regret very much, that during my stay in Ceylon I was prevented from performing my intended voyage to Calcutta, and enjoying the numerous interesting and instructive means of science which the Asiatic Society of Bengal there would have offered me. The greater is my satisfaction, that I am now able, to enter into a most valuable scientific connection with it."

Prof. Sayce writes:

"I must beg you to convey to the Asiatic Society of Bengal my sense of the great honour I have received in being elected an Honorary Member of so distinguished a body."

The SECRETARY read a letter from Mr. Cecil Bendall of the British Museum, of which the following is an extract:

"I beg to acknowledge the receipt of Vol. VI, Pt. II of Dr. Rajendralála Mitra's "Notices of Sanskrit MSS." accompanied by a letter from you, stating that further numbers will be supplied. I request you to tender my very hearty acknowledgments to all those to whom I may be indebted for this unexpected, but most acceptable, present.

"I take this opportunity of calling your attention to a statement contained in the volume just named, at pages 5 and 13 of the appended report addressed to yourself. Dr. Rajendralála Mitra there says, 'The task [of publishing facsimiles of old MSS.] is now formally taken up by the Palæographical Society of London and the artistic resources of London enable that Society to publish such excellent facsimiles, that I have not thought it expedient to follow my plan to the extent originally contemplated...'

"Unfortunately, the amount of support given to the Palæographical Society has been so small that it will be necessary to discontinue the series, though much against the wish of the Committee. The scantiness of this support may be illustrated from the fact that even the Government of India, usually so liberal in such matters, subscribed for no more than a single copy. I mention this, chiefly for the benefit of your Society, of Bábu Rájendralála (to whom I may request you to communicate this, as I have not the honour of his personal acquaintance) and of all interested in the publication of his "Notices of Sanskrit MSS.," that no misapprehension may arise as to the necessity of publishing accurate reproductions; yet I cannot but feel also that most excellent and characteristic work might be done by your Society, both through its Committee and its influential individual members, if a good number of additional subscriptions could be got from provincial Governments, Societies, and individuals.

"*A propos* of reproductions, I trust I shall not be thought discourteous in expressing a wish that all scholars in India, who give us facsimiles of MSS. or inscriptions, would at least use *some* process of permanent photography, even if the collotype or autotype direct from the original used by the Palæographical Society be unknown to Calcutta photographers. I could not but feel there was a great deal of truth in the strictures of Dr. E. Hultzch of Vienna in the 'Indian Antiquary' of Nov. 1882, (pp. 312-3) as to the reproductions furnished to us by scholars in Bengal, though I am bound to say I think their *tone* unnecessarily severe. But there can be little doubt, as I know from experience, that to the systematic student of palæography a few words in a good photograph are worth more than pages of mere lithographic imitation."

A letter was also read from Dr. Rajendralála Mitra on the same subject, in which he says:—

"Mr. Bendall is quite right in calling our attention to the desirableness of securing photographic reproduction of ancient records in a permanent form. Reduced eye-copies are as worthless for critical purposes as transcripts, and our aim should be to get as many photos as we can. But our artistic resources are exceedingly limited, and it is not often even easy to get silver prints, and they fade and become illegible in a decade. The only place where we can look for permanent prints is the Surveyor General's Office and there Major Waterhouse is always willing to help us. But his collotype is exceedingly troublesome and costly, and it is practicable only during the three months of our winter. His photo-zincographs cost less and can be worked all the year round, but I have often heard him complain of great pressure of public work in his Department. Sometimes my old MSS. are of such a colour that they don't yield good results under

the camera. There is no shop in Calcutta where anything like permanent photography is attempted. Under the circumstances I am obliged to abandon my project of publishing facsimiles of old MS S However, I shall try in future to get what I can through the kindness of Major Waterhouse. He has done much for the Society and is ever ready to help us, so I may cherish the hope of getting some good photozincographs from him.

"I should add that Dr. Hultzch's criticisms in the 'Indian Antiquary' refer to General Cunningham's facsimiles in the 'Archæological Survey Reports,' and not to those published by me."

The PRESIDENT reported that Moulvie Khudabuksh Khan, Bankipore, was largely in arrears of subscription to the Society, and although a registered letter had been sent to him in accordance with Rule 37, no notice had been taken of it. His name would, therefore, be suspended for a month as a defaulter in the Society's Meeting Room and, unless the sum due be paid in the meantime, he will be declared removed from the Society at its next meeting.

In accordance with Rule 38, this fact will be notified in the Proceedings.

The COUNCIL reported that Mr. Wood-Mason had returned from leave and had resumed charge of the office of Natural History Secretary.

On the proposal of the President, a vote of thanks was unanimously passed to Mr. L. de Nicéville for his services to the Society as Offg. Natural History Secretary.

The following note was read from Mr. Charles J. Rodgers on Mr. Delmerick's paper on "A coin of Dawar Bakhsh" read at the March meeting.

"Mr. Delmerick* in a paper lately read before the Society states that Jahangír never used the Kalimah on his coins. I wish to correct this statement.

I have rupees of every year of Jahangír. Of these the following have the Kalimah on them :—

1st year *Agrah;* 2nd, 3rd, 4th, 5th, *Patna* mint. 2 half rupees struck at *Kabul* in 1014 and 1015. (One of these has the month *Amardád* on it.) A rupee struck at *Ahmadnuggur* with no date on it. 2nd year *Ahmadábád.* A very large round rupee struck at *Patna* 1st year 1014. A large square rupee 2nd year 1015 struck at Lahore. All these

* Mr. Delmerick subsequently modified the statement into "Jahangír *seldom* used the Kalimah on his coins."

rupees are of extraordinary weight. The two last are in a splendid state of preservation. They show us that in the beginning of his reign Jahángir used the *Kalimah* on his coins. I have seen others and besides these I have seen gold coins of his with the Kalimah on them. No Mogul Emperor was so taken up with changes in the matter of coinage as Jahángír. A complete collection of his coins would be exceedingly interesting."

The following papers were read :—

1. *On the Geography of India in the reign of Akbar.—By* JOHN BEAMES, B. C. S. (With a Map.)

No. I. SUBAH AVADH, (OUDH).

(Abstract.)

Mr. Beames, in this series of papers, proposes to re-construct, as far as possible, the map of the Mughal Empire at the time of the first great settlement of the financial and political administrations effected in A. D. 1882 by Rájá Todar Mal. The details of this important operation are given in the Ain-i-Akbari, the Persian text of which has been published by the late Professor Blochmann, who did not live long enough to complete the work; and as his valuable notes have been lost, the greater portion of the work has to be done over again. The continuation of this work having been entrusted by the Society to other hands, Mr. Beames refrains from encroaching on that ground, but proposes to extract from the Persian text such details as are necessary for his purpose, confining himself for the present to Geography and reserving, for a larger work, references to Muhammadan historians and other authorities.

The dominions of Akbar were divided into twelve Provinces or Súbahs, *viz.*:—

Iláhábád, Ajmir, Bangólah, Lahor, Agrah, Ahmadábád, Dihlí, Multán, Avadh, Bihár, Kábul and Málwah.

To these were subsequently added three more, Birár, Khándesh, Ahmadnagar, making a total of fifteen.

Abul Fazl gives a chapter to each Subah beginning with Bengal in the extreme east and going westwards, but, for several reasons given in detail in his paper, Mr. Beames thinks it better to begin with Oudh. The materials which he has used are chiefly the reports of the recent Settlements of the several districts, supplemented by much valuable information scattered here and there in the *Oudh Gazetteer*.

The SUBAH OF OUDH was divided into 5 Sarkars, *viz.*, 1, Oudh; 2, Gorakpur; 3, Bahráich; 4, Khairábád; 5, Lakhnau. These Sarkars

were subdivided into Mahals. Mr. Beames' reconstruction of the Subah of Oudh may be summarized as follows :—

1. *Sarkar Oudh.*—21 mehals or pergunnas ; area, 27,96,206 bighas ;* Revenue 4,09,56,347 dams nagdi, 16,80,247 dams sayurghal; Castes various ; 1,340 cavalry, 23 elephants, 31,700 infantry.

This Sarkar was a compact tract of about 90 miles in length, lying principally on the right bank of the Chauká and Ghogra. The breadth varies very much and cannot be exactly stated. At its north-west end, it is much mixed up with Sarkars Lakhnau and Bahráich and two detached portions of the former Sarkar are included in it on its south-east side. On the south, it marches with Sarkars Manikpuri and Jaunpore of the Subah of Iláhábád.

II. *Sarkár Gorakhpúr.*

24 mahals. Area, 24,42,836 bigahs. Revenue, 1,19,26,790 dams nagdi ; 51,235 s. ; Castes various ; 1,000 horse, 22,000 foot.

This Sarkar stretches from the Gandak to the Ghogra, including the modern districts of Gorákhpur and Basti in the N. W. P. and the greater part of Gonda in Oudh. The western boundary where it marches with Sarkar Bahraich is extremely indefinite, and the same may be said of the north boundary. Even in the present day, a very large portion of this tract is covered by dense forests and this must have been the case to a greater extent in the 16th century. The small areas given for the pergunnahs clearly prove this. There were clearings in the forests here and there which were loosely grouped together under local names taken from some Hindu Chief or Afghan adventurer who was powerful in those parts.

III. *Sarkár Bahráich.*

11 mahals. Area 18,23,235 bigahs. Revenue 2,41,20,525 d. 4,66,482 s. ; Castes various ; 1,170 horse ; 14,000 foot.

This Sarkár appears to have occupied all the western portion of the trans-Ghogra country ; its boundaries on the Gorakhpur side are very uncertain. An immense proportion of it was jungle, with scattered settlements of Rájpút clans here and there. It stretched far up into the Nipal Teráí, and much of it was only nominally under Musalman sway.

IV. *Sarkár Khairábád.*

22 mahals. Area 19,87,700 bigahs. Revenue 4,36,44,381 d. 1,71,342 s. ; Castes various ; 1,160 horse, 27,800 foot.

This Sarkar includes the whole of western Oudh. In the southern part, the mahals are generally traceable and well-defined, but in the north the great submontane forest appears to have been only sparsely

* The areas given throughout only refer to cultivated land.

peopled; and to lay down definite boundaries would not only be impossible, but would convey an erroneous impression. It only remains to observe that special interest attaches to one of the mahals in this Sarkár, that of Laharpúr, as being the birthplace of the illustrious financier, Rajáh Todar Mal, the author of the great Revenue Settlement whose features Mr. Beames is now endeavouring to restore.

V. *Sarkár Lakhnau.*

55 mahals. Area 33,07,426 bigahs. Revenue 8,07,16,160 d. 45,72,526 s. Castes various; 2,680 horse, 36 elephants, 83,450 foot.

The greater number of mahals in this Sarkár are still extant and have been identified by Mr. Millett in the Sultánpúr Settlement Report. This Sarkár, the richest and most cultivated of the whole, occupies the south-west portion of the Subah, with certain outlying patches.

Mr. Beames has excluded from this review all those portions of the present province of Oudh which did not lie within the Suhah of that name. There are many uncertain points and Mr. Beames is aware that his map cannot be accepted as anything but a first attempt. He trusts, however, that it will be useful in one way. It is not until you come to construct a map and find yourself forced to account for every inch of the tract included, that you find out the gaps in your information. Mr. Beames concludes with expressing a hope that local officers, interested in the history of the province, will come forward with information which may clear up all doubtful points.

The paper will be published in full in Journal, Part I, for 1884.

2. *Notes on a Gold Coin of Kám Bakhsh.—By* J. G. DELMERICK.

Aurangzeb, after reigning for nearly fifty years, died on the 28th Zilkádah A. H. 1118 or 21st February 1707 A. D. He had five sons.

1. MUHAMMAD SULTAN. Born on the 4th Ramzán A. H. 1049 (14th November 1639). His mother was Nuwab Bai.* Although he rebelled and joined his uncle Shuja whose daughter he espoused, he never asserted his independence so far as to strike coins in his own name. Aurangzeb imprisoned him first in Selimgarh, and subsequently in Gwálior. He died in the 21st year of the reign of his father.

* See note at page 199 of Keene's Turks in India. The story therein recorded is on the face of it absurd. There was no Hindu Rajah of Kashmir in the time of Aurangzeb. It is not likely that a Hindu Rajah would have given his daughter in marriage to a Muhammadan faquir. Nor was it probable that the issue of such a union could have been *adopted* by a Hindu, or been brought up as Hindus by the Hindu Rajah. Nuwab Bái was a Hindu woman before she became an inmate of Aurangzeb's haram. Bái is a Dakhin word and means a lady.

2. MUHAMMAD MUAZZAM. Sháh Alam Bahádur. He was the uterine brother of Muhammad Sultán, and was born towards the latter end of Rajab A. H. 1053, (A. D. September 1643). He was at Pesháwar when intelligence reached him of the demise of his father, and he ascended the throne at Lahore at the end of Muharram A. H. 1119 (April 1707 A. D.).

3. MUHAMMAD AZAM SHAH. He was born on the 12th of Shábán A. H. 1063 (28th June A. D. 1653). His mother was Dilráz Bánu Begam, daughter of Sháh Nawáz Safáwi. Twelve days after the death of Aurangzeb, while still in the Dakhin, he assumed sovereign rights by striking coins and ordering the Khutba to be read in his name. Sháh Alam Bahádur Sháh defeated him in battle at Jáju Sarái between Agra and Dháúlpur where he lost his life on the 18th Habi-ul-Awwal A. H. 1119 (10th June A. D. 1707). The coins of Azam Sháh are scarce, but one of them has been published by Marsden *vide* DCCCC, plate XLIII of his Numismata Orientalia.

4. MUHAMMAD AKBAR. Was born on the 12th Zil Hajja A. H. 1067 (12th September A. D. 1656). His mother had probably once been a dancing-girl, for she had no title, and was familiarly called Begam which is a very common name among women of that class. When he rebelled against his father by joining the Rána of Udipur, it was reported that he had coined money in his name, but no such coin has as yet, at far as I know, been discovered, and I suspect the report was purposely disseminated by his brother Muhammad Muazzam to embitter his father's mind against him. He fled from the Rájputs and after finding a temporary asylum with Sambháji, he escaped to Persia and died in Garmsir towards the close of the reign of Aurangzeb.

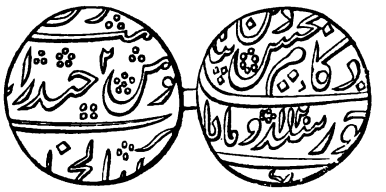
5. MUHAMMAD 'KAM BAKHSH. He was born on the 10th Ramzán A. H. 1077 (25 February A. D. 1667). His mother was Bái Udipuri. He was put under restraint during the siege of Jingi by the Generals Jamdat-ul-Mulk and Nusrat Jang for a threatened defection, but being the favourite son of Aurangzeb, he was soon released.

On receiving the news of the death of his father at Bijápur, he lost no time in proclaiming himself Emperor. In the Khutba he was styled *Din-i-panah* (Asylum of the Faith) and his coins bore this title also. On the 3rd Zil Kádáh A. H. 1120* (4th January A. D. 1709) Sháh Alam Bahadur Shah met him near Haidarábád. A bloody battle ensued, Kám Bakhsh was wounded and died of his wounds on the same day.

I have recently seen a gold muhar of Kám Bakhsh struck at Haidarábád in A. H. 1120 in the second year of his temporary assump-

* From my copy of the *Tárikh-i-Muzafari*—Elphinstone (page 595 of his History) is wrong in his dates.

tion of sovereignty, and I subjoin a sketch of it for publication in the Proceedings of the Asiatic Society of Bengal. It is the property of Pandit Rattan Naráin, the fortunate owner of many rare or unique coins of the Pathán and Mughal kings of Delhi.



3. *Coins struck in India by Ahmad Sháh Durráni.—By* CHARLES J. RODGERS.

(Abstract.)

The object of Mr. Rodgers's paper is to give a short account of the coins which Ahmad Sháh Abdalli or Durráni struck in India, and to illustrate thereby the principal events of his reign.

On arriving at Kandahár, after the assassination of Nadir Sháh, Ahmad Sháh ordered coins to be struck bearing the following couplet:

حکم شد از قادر بیچون با حمد شاہ
سکه زن برسیم و زر از اوج ماهي تابماہ

Immediately afterwards we find him on his way through Gazni to Kábul which he reduced, and afterwards he obtained possession of Peshawar and returned to Kandahar. After settling his affairs there, he invaded India and seized Lahore. He was defeated at Sirhind, within 10 months of the murder of Nadir Sháh, by the forces of Muhammad Sháh under his son Ahmad Sháh. Mr. Rodgers's first rupee illustrates this campaign, having been struck at Lahore in Ahmad Sháh Durrani's first year and bearing on the obverse the inscription—

در دراں احمد شاہ بادشاہ احد
ضـــرب دار السلطنـــۃ لاهور
میمنت مانوس

The reverse has the couplet given above which may be thus translated:

Ahmad Shah received an order from the Peerless Powerful one:
To strike coins in silver and gold from the height of the fish to the Moon.

Mr. Rodgers possesses a coin of the 2nd year of Ahmad Sháh, the inscription of which shews that it was struck at Peshawar. This was probably struck in a second invasion when he was persuaded by Meer

Munnoo governor of Lahore to retire. But the latter never paid the tribute he promised. So the Durrani invaded India, captured Meer Munnoo and seized Lahore and Multan. These events occupied the 3rd, 4th and 5th years of the reign of Ahmad Shah Durráni. Mr. Rodgers's second coin illustrates the conquest of Lahore, as the inscription on the reverse shews that it was struck in that city in the fifth year of the conqueror's reign. The 3rd, 4th, 5th and 6th coins illustrate the hold he kept on the annexed province of Multan and the trans-Indus provinces. The inscriptions shew that the 3rd was struck at Multan in the 6th year of his reign, the fourth at Derah in the 7th year, the fifth at Peshawar in the 7th year. This last is unique. The inscription on it runs as follows:—

Obverse ٧ در دران احمد شاه

Reverse ١١٦٧ ضرب پیشاور

No. 6 is a beautiful coin belonging to Sir Edward Bayley, bearing the date 1170, struck at Multan. Besides the above Mr. Rodgers possesses a rupee of Multan of the 5th and one of the 7th year of Ahmad Shah Durrani. Also one of Bhakkhan of the 7th year which shews that these parts were under his sway.

The Afghán king had spared Meer Munnoo's life and reinstated him. On his death his widow Mangalána Begam seized the reins of government, but her son Ghazi-ud-din rebelled against her. Ahmad Shah Durráni came to her aid, and made his son Taimur Sháh Viceroy of Lahore and Multán, while he passed on through Sarhind to Delhi. The viceroyalty of Taimur is illustrated by coins Nos. 15 and 16.

When Ahmad Sháh arrived at Delhi he began, with the help of Mangalána Begam to plunder in a systematic way. He married the daughter of Muhammad Sháh, and Taimúr married the daughter of Alamgir II, who seems to have assisted in the plunder of his own capital. Ahmad Sháh Durráni stayed in all about 40 days in Delhi. Coin No. 7 illustrates this short period. During this occupation of Delhi Mathura was plundered. Its idols and temples were overthrown and many men were massacred. Alamgir was left in possession of the throne, but Ahmad Sháh Durrani's creatures were in power everywhere. Taimur Sháh was left in Lahore with an efficient general and Ahmad Sháh returned to Kandahar.

But the Mahrattas seized Delhi and overran the Panjab. Ahmad Sháh returned, took and plundered Delhi and defeated the Mahrattas in the battle of Pánipat. This invasion occupied the 13th and 14th years of Ahmad Shah Durrani's reign, and is illustrated by coins Nos. 8—13 of the plate annexed to Mr. Rodgers's paper. They all bear on the obverse the Persian couplet quoted above. No. 8 appears from the reverse to have

been struck at Aonlah a town in Rohilkand on the railway between Barelli and Chandausi. The 9th was struck at Murádábád, the 10th at Sháhjahánábád, the 11th at Atak, the 12th at Barelli, the 13th at Sarhind. Besides these coins which Mr. Rodgers has figured in the annexed plate, he has of Lahore 14th, 1173 A. H.; 15th 1175 A. H.; Sháhjahánábád 15th, 1174 A. H.; Lahore 16th, 1175 A. H.; 16th, 1176 A. H.; Sarhind 16th, 1175 A. H. Mr. Theobald of Bedford has one struck at Farrukhabad during this period.

Immediately after the battle of Panipat Ahmad Sháh left India. After his departure the Sikhs recovered power, defeated the governor of Lahore and laid siege to Jandíala 11 miles from Amritsar. This last matter brought Ahmad Sháh again on the scene. He started off with his guard ordering his army to follow him. The besiegers at once fled. After staying a few days at Jandiálá he crossed the Beás and Sutlej and defeated the main body of the Sikhs. The founder of the present Pattiálá family was among the prisoners. Ahmad Sháh soon after returned to Kandahár. This invasion took place in 1176 A. H. The Sarhind coin mentioned above seems to illustrate this period. It is of his 16th year. The year is 1175. But that must be a mistake. However the Lahore coins go on steadily. One of the 17th year is dated 1176; another 1117 A. H. One of the 18th year has 1177; another 1178; a 19th year one has 1178. The Dehli and Dērat coins cease. Ahmad Sháh no longer ruled there. No rupees of the 20th year of Ahmad Sháh struck at Lahore can be found.

After Ahmad Sháh's return to Affghánistán, the Sikhs rose and defeated his governors. He again invaded India in 1178 A. H. But this invasion was not a success. The Sikhs seizing Lahore struck coins there in 1822 A. S. But their rule was not uninterrupted, for Mr. Rodgers has a rupee of Lahore of Ahmad Sháh struck in his 21st year and 1180 A. H.; moreover one of his 22nd year is in the British Museum. Mr. Rodgers also possesses a coin of Ahmad's 25th year struck at Peshawar. It was to this part of India that his rule was restricted before he died.

Coin No. 17 is a modern Pattiala rupee, with the couplet of Ahmad Sháh, who created the first Maharajah of Pattiala, on the obverse. On the reverse there is the same inscription as on No. 13. The mint is Sarhind. This is the only thing in India to remind us that Ahmad Sháh invaded this country no less than seven times.

Library.

The following additions have been made to the Library since the Meeting held in April last.

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SMITHSONIAN INSTITUTION.

PERIODICALS PURCHASED.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 7.

Berlin. Deutsche Litteraturzeitung,—Vol. V, Nos. 5-8.

———. Journal für die reine und angewandte Mathematik,—Vol. XCVI, No. 1.

Calcutta. The Calcutta Review,—Vol. LXXVIII, No. 156, April, 1884.

Calcutta. Indian Medical Gazette,—Vol. XIX, No. 4, April, 1884.
Cassel. Botánisches Centralblatt,—Vol. XVII, Nos. 4-8.
Geneva. Archives des Sciences Physique et Naturelles,—Vol. XI, No. 3.
Giessen. Jahresbericht über die Fortschritte der Chemie,—Part II, 1882.
Göttengen. Gelehrte Anzeigen,—Nos. 5-7, 1884.
———. Nachrichten,—Nos, 3-5, 1884.
Leipzig. Annalen der Physik und Chemie,—Vol. XXI, Nos. 3-4.
———. ———. Beiblätter,—Vol. VIII, Nos. 2-3.
———. Hesperos,—Vol. III, Nos. 66-67.
———. Literarisches Centralblatt,—Nos. 6-2, 1884.
London. Annals and Magazine of Natural History,—Vol. XIII, No. 75, March, 1884.
———. Chemical News,—Vol. XLIX, Nos. 1268-1272.
———. Entomologist,—Vol. XVII, No. 250, March, 1884.
———. Entomologist's Monthly Magazine,—Vol. XX, No. 238, March, 1884.
———. Journal of Botany,—Vol. XXII, No. 254, February, 1884.
———. Journal of Science,—Vol. VI, No. 123, March, 1884.
———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XVII, No. 105, March, 1884.
———. Nineteenth Century,—Vol. XV, No. 85, March, 1884.
———. Publishers' Circular,—Vol. XLVII, Nos. 1116-1117.
———. Quarterly Journal of Microscopical Science,—Vol. XXIV, New Series No. 93, January, 1884.
———. Society of Arts,—Journal, Vol. XXXII. Nos. 1634-1637.
New Haven. American Journal of Science,—Vol. XXVII, No. 158, February, 1884.
Paris. Annales de Chimie et de Physique.—Nol. I, Series VI, February and March, 1884.
———. Académie des Sciences,—Comptes Rendus des Séances,—Vol. XCVIII, Nos. 9-13.
———. Journal des Savants,—March, 1884.
———. Revue Critique,—Vol. XVII, Nos. 11-15.
———. Revue des deux Mondes,—Vol. LXII, Nos. 2-3.
———. Revue de Linguistique,—Vol. XVII, No. 1.
———, Revue Scientifique,—Vol. XXXIII, Nos. 11-15.
Philadelphia. Tryon's Manual of Conchology, Vol. VI, No. 1.
Vienna. Orientalisches Museum,—Oesterreichische Monattschrift für den Orient, Vol. X, No. 3.
———. Kaiserlichen Akademie der Wissenschaften über die Mundarten und die Wanderungen der Zegeuner Europa's, Vols. I-XII.

Books Purchased.

Temple, Capt. R. C. The Legends of the Punjab, No. IX, April, 1884. 8vo. Bombay, 1884.

Zachariae, Theodor. Beiträge zur Indischen Lexicographie. 8vo. Berlin, 1883.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR JUNE, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 4th June, 1884, at 9.15 P. M.

D. WALDIE, F. C. S., Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Geological Survey of India,—Memoirs of the Geological Survey of India, Palæontologia Indica, Ser. X, Vol. III, Part 1, with 5 Plates; Ser. XIII, Vol. I, Part 4, with 7 Plates.

2. From the Meteorological Reporter to the Government of India,—Meteorological Observations in India in 1883, by H. F. Blanford.

3. From the Academia dei Lincei, Rome,—Report of the Italian Chamber of Deputies, Rome, (Sittings of 15th March, 1884), containing discourses on the occasion of the death of the late Deputy, Quintius Sella, President of the Academia dei Lincei.

4. From the Revenue Secretariat, Republic of Guatemala,—Annual Report for 1883, of the Statistical Section of the Revenue Department of the Republic of Guatemala.

5. From the Bengal Government,—(1) Report of the Calcutta Court of Small Causes during the year 1883; (2) Report of the Census of British India taken 17th February, 1881, Vols. I and III; (3) Annual Report on the Insane Asylums in Bengal for 1883.

6. From the Birmingham Philosophical Society, Birmingham,—Proceedings of the Birmingham Philosophical Society, Sessions 1881-82 and 1882-83.

7. From the Chief Commissioner, Central Provinces,—Report on the Judicial Administration of the Central Provinces (Civil and Criminal) for the year 1883.

8. From the Government, North West Provinces,—(1) A Catalogue of Sanskrit MSS. in Oudh for the year 1882; (2) Statistical, Descriptive and Historical Account of the N. W. Provinces of India, Vol. VIII. Muttra, Allahabad, Fatehpur, by H. C. Conybeare, F. H. Fisher and J. P. Hewett.

9. From the Home Department,—(1) Report on Publications issued and registered in the several Provinces of British India during the year 1882; (2) Religious Thought and Life in India. An account of the Religions of the Indian Peoples based on a life's study of their literature and on personal investigations in their own country, Part I. Vedism, Bráhmanism and Hinduism, by Monier Williams.

10. From the Author and Translator,—(1) On the verbal Roots of the Sanskrit Language and of the Sanskrit Grammarians by A. Hjalmar Edgren, Instructor in Modern Languages, Yale College; (2) On the Relations in the Rig-Veda between the Palatal and Labial Vowels and their corresponding semi-vowels, by the same; (3) Meghaduta of Kalidasa, translated into Swedish from the original, by the same; (4) Málaviká of Kalidasa, translated into Swedish from the original Sanskrit, by the same; (5) De Codicibus nonnullis Indicis, qui in Bibliotheca Universitatis Lundencis asservantur, by the same.

11. From the Pali Text Society, London,—(1) The Thera- and Therí-Gáthá being Stanzas ascribed to Elders of the Buddhist Order of Recluses by Hermann Oldenberg and Richard Pischel; (2) The Puggala-Paññatti, Part I, Text by the Rev. Richard Morris.

12. From the Surveyor-General of India,—Synopsis of the Results of the operations of the Great Trigonometrical Survey of India, Vols. XVII, XVIII, XIX, XX and XXI by Lieut.-Genl. J. T. Walker, C. B.

13. From the British Association for the Advancement of Science, London,—Report of the British Association for the Advancement of Science for the year 1883.

14. From the Naturwissenschaftliche Verein für Steiermark, Graz, (Stylia)—Mittheilungen des Naturwissenschaftlichen Vereines für Steiermark for the years 1881, 1882 and 1883.

15. From the Canadian Institute, Toronto,—(1) Journal of the Canadian Institute, Vol. I, Parts I and II; (2) Proceedings of the Canadian Institute, Vol. I, Nos. 3-5, Vol. II, No. 1.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members:

1. T. G. H. Moncreiffe, Esq.
2. Colonel E. J. Macnair.

The SECRETARY reported that the following gentlemen have intimated their desire to withdraw from the Society :

W. G. Olpherts, Esq.

J. C. Parker, Esq.

The SECRETARY read a letter from Mr. Charles Meldrum, in charge of the Royal Alfred Observatory, Port Louis, Mauritius, dated 15th April, 1884, thanking the Society for the honour conferred upon him by his election as special Centenary Honorary Member.

Mr. Meldrum writes—

"I beg to be allowed to offer to the President and to the members my best thanks for the high honour which they have been pleased to confer upon me, and to say that I am proud of belonging to a Society with which so many distinguished names are associated, and which, among other important labours, has long been, and still is, more than ever, successfully working for the advancement of meteorology."

The SECRETARY reported that Maulawí Khudábaksh, Khan Bahadur, whose name had been posted up since last monthly meeting as a defaulting member in accordance with Rule 38, had remitted the arrears due by him, and that in consequence no further action would be taken against him.

The COUNCIL reported that Mr. C. H. Tawney had been elected Member of Council and had consented to act as Philological Secretary during the absence of Dr. Hoernle.

The COUNCIL reported that the Library Catalogue was at last published and was being distributed to Members.

The VICE-PRESIDENT said :—

I have to announce to the meeting that the Library Catalogue which has been so long in preparation is at last completed. There has been much delay in getting this accomplished, caused chiefly by disappointments with printers. Great credit is due to the Assistant Secretary, Mr. Bion, for his exertions in the compilation of this Catalogue and in getting it through the press.

The Society is also very much indebted to Mr. Medlicott and Dr. Hoernle for the care and labour they have devoted to the superintendence of the compilation and publication of the Catalogue, now successfully accomplished, and, in the name of the Council, I beg to propose a hearty vote of thanks to these gentlemen for their valuable services.

The VICE-PRESIDENT then announced the death of Sir E. C. Bayley, K. C. S. I., and said—

I have to bring before the notice of the meeting the sad news of the death of an old member of this Society, Sir Edward Clive Bayley. He was President of the Society in 1863, 1864, 1866, 1875 and 1877 and Vice-President in 1872, 1874 and 1876. He took an active part in the discussions of the Society, and was a frequent contributor to the Journal. An account of his papers will be found in the forthcoming Centenary Review in the chapters on Antiquities, Coins, Ancient Indian Alphabets and History.

From information supplied by Mr. Tawney I have to add that, when he retired to England, he continued his Palæographic and Numismatic researches, publishing two pamphlets on the Genealogy of Modern Numerals and one on certain dates occurring on the coins of the Hindu Kings of Cabul expressed in the Gupta era, and in Arabic or quasi-Arabic numerals.

Mr. Tawney truly adds that those members of our Society who had the privilege of his acquaintance will remember the graceful urbanity of his manners, in which the modesty of the true scholar was combined with the courtesy of the high-bred gentleman. I am sure that the meeting will sympathise with the Council in their sorrow for his loss.

The following papers were read :—

1. *Descriptions of some new Asiatic Diurnal* Lepidoptera, *chiefly from Specimens contained in the Indian Museum, Calcutta.—By* F. MOORE, F. Z. S., A. L. S. *Communicated by the* NATURAL HISTORY SECRETARY.

The paper will be published in Part II of the Journal.

2. *Notes from Varaha Mihira's Panchasiddhántika.—By* G. THIBAUT, PH. D. Part I. *The mean motions of the Planets according to the Súrya and Romaka Siddhánta.*

(Abstract.)

The Panchasiddhántiká by the famous Varáha Mihira (the author of the Bṛihatsanhitá) is perhaps the most interesting among the hitherto unpublished astronomical writings of the Hindus, as it gives a kind of abstract of some of the old Siddhántas which have not come down to our time and allows of a closer insight, than has been hitherto possible, into the genesis of modern Hindu astronomy and its dependence on Greek science. Two MSS. of the work have been found of late years by Dr. Bühler, but as they are exceedingly incorrect and do not comprise a commentary on this very difficult work, a satisfactory edition of the entire book is perhaps not feasible as yet. Meanwhile the writer of the present

paper submits some particularly interesting parts of the work to a preliminary investigation.

The paper gives at first a short conspectus of the contents of the entire work, and extracts a few passages, among which one is of great interest, as containing an approximately correct statement of the difference in longitude between Ujjain and Benares on one side and Yavanapura on the other. That Yavanapura is Alexandria has already been surmised by Professor Kern, and may now be considered proved by the passage alluded to. The paper thereupon proceeds to an enquiry into those parts of the Panchasiddhánta which treat of the mean motions of the planets according to the Súrya Siddhánta and the Romaka Siddhánta. From a consideration of the former Siddhánta as represented by Varáha Mihira, it appears that the Súrya Siddhánta which has come down to our time differs considerably from the Súrya Siddhanta as known to Varáha Mihira; which latter work seems to have agreed very closely (as far as the mean motions are concerned) with the Aryabhaṭiya published by Prof. Kern. Of greater interest still is the information Varáha Mihira gives concerning the Romaka Siddhánta. From the name of this Siddhánta, it was concluded long ago that it stood in particularly close relation to the West.

This supposition is now confirmed by what we learn from the Pancha Siddhánta, according to which the Romaka Siddhánta employed a *yuga* altogether different from the enormous astronomical periods employed in the generality of Hindú astronomical books and clearly founded on the so-called Metonic cycle of 19 years. The length of the tropical year of the Romaka Siddhanta is exactly the same as the one determined by the Greek astronomer Hipparchus. It is thus the first time that we find an *entire* agreement between Hindu and Greek determinations of the year. Some other points of agreement are noticed. The Romaka Siddhánta was probably composed in 501 A. D.; it derived, however, its elements from older works; the mean motions of the planets in particular it took from the Astronomer Láṭa, whose dependence on Greek astronomy is corroborated by the fact that he reckoned the beginning of the civil day from the moment of sunset in Yavanapura.

The paper will be published in full in Part I. of the Journal.

LIBRARY.

The following additions have been made to the Library since the meeting held in May last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—Circulars, Vol. III, No. 30.
———. ———. Studies from the Biological Laboratory,—Vol. III, No. 1.
Batavia. Natuurkundig Tijdschrift voor Nederlandsch-Indië,—Vol. XLIII.
Bombay. The Indian Antiquary,—Vol. XIII, Part 157, June, 1884.
Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 8, 1884.
Calcutta. Agricultural and Horticultural Society of India,—Journal, Vol. VII, (New Series) Part 2.
———. Geological Survey of India,—Records, Vol. XVII, Part 2.
———. Original Meteorological Observations,—November and December, 1883.
———. United Service Institution of India,—Journal, Vol. XIII, No. 59.
Chicago. The American Antiquarian and Oriental Journal,—Vol. VI, No. 2, March, 1884.
Copenhagen. K Nordiske Oldskrift-Selskab,—Aarboger, Parts 3 and 4, 1883; Part 1, 1884.
———. ———. Tillœg, 1882 and 1883.
Lahore. Anjuman-i-Panjab,—Journal, Vol. IV, Nos. 19-21.
London. The Academy,—Nos. 624-627, 1884.
———. The Athenæum,—Nos. 2947-2950, 1884.
———. Institution of Mechanical Engineers,—Proceedings, No. 1, January, 1884.
———. Nature,—Vol. XXIX, Nos. 755-758.
———. Pali Text Society,—Journal, 1883.
———. Royal Astronomical Society,—Monthly Notices, Vol. XLIV, Nos. 4-5, February and March, 1884.
———. Royal Geographical Society,—Proceedings, Vol. VI, No. 4, April, 1884.
———. Royal Microscopical Society,—Journal, Vol. IV, (Ser. II), Part 2, April, 1884.

London. ———. List of Fellows, 1884.
———. Statistical Society,—Journal, Vol. XLVII, Part 1, March, 1884.
Paris. Société d'Anthropologie,—Bulletin, Vol. VI, (Ser. III), No. 4.
———. Société de Géographie,—Comptes Rendus des Séances, Nos. 8-9, 1884.
Rome. Società degli Spettroscopisti Italiani,—Memorie, Vol. XIII, Nos. 2-3, February and March, 1884.
San Francisco. California Academy of Sciences,—Bulletin, No. 1, February, 1884.
Schaffhausen. Société Entomologique Suisse,—Bulletin, Vol. VI, Nos. 8-9.
St Petersburgh. Russian Geographical Society,—Proceedings, Vol. XX, No. 1.
Turin.. R. Accademia della Scienze,—Atti, Vol. XIX, No. 2.
Vienna. K. K. Geologischen Reichsanstalt,—Jahrbuch, Vol. XXXIV, No. 1.
———. Ornithologische Verein,—Mittheilungen, Vol. VIII, No. 4.

Books and Pamphlets,

presented by the Authors, Translators, &c.

Edgren, A. Hjalmar. De codicibus nonnullis Indicis, qui in bibliotheca Universitatis Lundensis asservantur. 4to. Lund (Sweden), Pam.
———. On the verbal Roots of the Sanskrit Language and of the Sanskrit Grammarians. 8vo. New Haven, 1879.
———. On the Relation in the Rig-Veda between the Palatal and Labial Vowels and their corresponding Semivowels. 8vo. New Haven, 1880.
———. Mâlavikâ of Kalidasa translated into Swedish from the Original Sanskrit. 8vo. Göteborg, 1877.
———. Meghadutâ of Kalidasa, translated into Swedish from the original Sanskrit. 8vo. Göteborg, 1875.

Miscellaneous Presentations.

Report of the Italian Chamber of Deputies, Rome, (sittings of 15th March, 1884) containing discourses on the occasion of the death of the late Deputy Quintino Sella, President of the Accademia dei Lincei. Fcp. Rome, 1884.

Academi dei Lincei.

Annual Report on the Insane Asylums in Bengal for 1883. Fcp. Calcutta, 1884.
Report of the Calcutta Court of Small Causes during the year 1883. Fcp. Calcutta, 1884.

Report of the Census of British India taken 17th February 1881, Vols. I and III. Fcp. London, 1883.

BENGAL GOVERNMENT.

Proceedings of the Birmingham Philosophical Society. Sessions 1881-82 and 1882-83. 8vo. Birmingham, 1884.

BIRMINGHAM PHILOSOPHICAL SOCIETY, BIRMINGHAM.

Report of the British Association for the Advancement of Science for the year 1883. 8vo. London, 1884.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, LONDON.

Journal of the Canadian Institute. Vol. I, Parts 1-2. 8vo. Toronto, 1879-81.

Proceedings of the Canadian Institute. Vol. I, Nos. 3-5; Vol. II, No. 1. 8vo. Toronto, 1882-84.

CANADIAN INSTITUTE, TORONTO.

Report on the Judicial Administration of the Central Provinces (Civil and Criminal) for the year 1883. Fcp. Nagpur, 1884.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Memoirs of the Geological Survey of India, Palæontologia Indica, Ser. X, Vol. III, Part 1; Ser. XIII. Vol. I, Part 4. 4to. Calcutta, 1884,

GEOLOGICAL SURVEY OF INDIA.

A Catalogue of Sanskrit MSS. in Oudh for the year 1882. 8vo. Allahabad, 1883.

Statistical, Descriptive and Historical account of the N. W. Provinces of India, Vol. VIII, Muttra, Allahabad, and Fatehpur. 8vo. Allahabad, 1884.

GOVERNMENT, N. W. PROVINCES.

Report on Publications issued and registered in the several Provinces of British India during the year 1882. 8vo. Calcutta, 1884.

WILLIAMS, MONIER. Religious Thought and Life in India. Part I. Vedism, Brahmanism, Hinduism. 8vo. London, 1883.

HOME DEPARTMENT.

International Meteorological Observations, January and February, 1883. 4to. Washington, 1884.

Meteorological Observations in India in 1883. Fcp. Calcutta, 1884.

Monthly Weather Review, February, 1884. 4to. Washington, 1884.

METEOR. REPORTER TO THE GOVERNMENT OF INDIA.

Mitheilungen des Naturwissenschaftlichen Vereines für Steirmark for the years 1881, 1882 and 1883. 8vo. Graz, 1882-84.

NATURWISSENSCHAFTLICHEN VEREINES FUR STEIRMARK.

The Puggala-Paññatti, Part I, Text, by the Rev. Richard Morris. 8vo. London, 1883.

The Thera- and Theri-Gatha, by Hermann Oldenberg and Richard Pischel. 8vo. London, 1883.

PALI TEXT SOCIETY, LONDON.

Annual Report for 1883 of the Statistical section of the Revenue Department of the Republic of Guatemala. 8vo. Guatemala, 1884.

REVENUE SECRETARIAT, REPUBLIC OF GUATEMALA.

Synopsis of the Results of the Operations of the Great Trigonometrical Survey of India, Vols. XVII-XXI by Lieut.-General, J. T. Walker, C. B. 4to. Dehra Dun, 1883.

SURVEYOR GENERAL OF INDIA.

PERIODICALS PURCHASED.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 8, May, 1884.

Berlin. Deutsche Litteraturzeitung,—Vol. V, Nos. 9-15.

———. Journal für die reine und angewandte Mathematik,—Vol. XCVI, No. 2.

———. Sanders' Ergänzungs-Wörterbuch der deutschen Sprache,—Parts 35 and 36.

Calcutta. Indian Medical Gazette,—Vol. XIX, No. 5.

Cassel. Botanisches Centralblatt,—Vols. XVII, Nos. 9-13: XVIII, 1.

Edinburgh. The Edinburgh Review,—Vol. CLIX, No. 327, April, 1884.

Geneva. Archives des Sciences Physiques et Naturelles,—Vol. XI, No. 4.

Göttingen. Gelehrte Anzeigen,—No. 8, 1884.

Leipzig. Hesperos,—Vol. III, Nos. 68-70.

———. Literarisches Centrablatt,—Nos. 10-16, 1884.

London. Annals and Magazine of Natural History,—Vol. XIII, No. 76, April, 1884.

———. Chemical News,—Vol. XLIX, Nos. 1273-1276.

———. Entomologist,—Vols. XVI, Nos. 247; XVII, 251.

———. Entomologist's Monthly Magazine,—Vol. XX, Nos. 235 and 239, December, 1883 and April, 1884.

———. The Ibis,—Vol. II, (5th Ser.), No. 6, April, 1884.

———. Journal of Botany, Vol. XXII, Nos. 255 and 256, March and April, 1884.

———. Journal of Science,—Vol. VI, No. 124, April, 1884.

———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XVII, No. 106, April, 1884.

———. Messenger of Mathematics,—Vol. XIII, Nos. 9-10, January and February, 1884.

———. Mind,—No. 34, April, 1884.

———. Nineteenth Century,—Vol. XV, No. 86, April, 1884.

———. Numismatic Chronicle,—Part 4, 1883.

London. Publishers' Circular,—Vol. XLVII, Nos. 1118-1119.
———. Quarterly Review,—Vol. CLVII, No. 314. April, 1884.
———. Society of Arts,—Journal, Vol. XXXII, Nos. 1638-1642.
———. Westminster Review,—Vel. LXV, No, 130, April, 1884.
New Haven. American Journal of Science, Vol. XXVII, Nos. 159-160, March and April, 1884.
Paris. Académie des Sciences,—Comptes Rendus des Séances, Vol. XCVIII, Nos. 14-17; and Tables, Vol. XCVII.
———. Annales de Chimie et de Physique,—Vol. I, (6th Series), April, 1884.
———. Journal des Savants,—April, 1884.
———. Revue Critique,—Vol. XVII, Nos. 16-19.
———. Revue des deux Mondes, Vol. LXII, No. 4.
———. Revue Scientifique,—Vol. XXXIII, Nos. 16-19.

Books Purchased.

Gould, J. The Birds of New Guinea. Part 15, Fcp. London, 1883.
Muller, Max. Sacred Books of the East. Vols. XV-XVI. 8vo. Oxford, 1884.
Report of H. M. S. "Challenger" Zoology, Vol. VIII. 4to. London, 1883.
Roscoe and Schorlemmer, Professors. Treatise on Chemistry, Vol. III, Organic Chemistry. Part 2. 8vo. London, 1884.
Temple, Captn. R. C. Legends of the Panjab, Nos. 8-9, May and June, 1884. 8vo. Bombay, 1884.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR JULY, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd July, 1884, at 9·15 P. M.

D. WALDIE, ESQ., F. C. S., Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced:—

1. From the Archæological Survey of India,—Report of a Tour in the Central Provinces and Lower Gangetic Doab in 1881-82, by General A. Cunningham, C. S. I., C. I. E.

2. From the Authors,—(1) La Vipera ed il suo Veleno, by Dr. Giuseppe Badaloni; (2) Il Morso della Vipera ed il Permanganato di Potassa, with an English translation, by the same; (3) On the Relations of Weather to Mortality and on the Climatic effects of Forests by Charles Meldrum, LL. D., F. R. S.; (4) Synoptic Weather Charts of the Indian Ocean for February 1861, by the same; (5) Monthly notices of the Meteorological Society of Mauritius, new series Nos. 1, 9-12, by the same; (6) Proceedings and Transactions of the Meteorological Society of Mauritius, vols. IV, V and VI, by the same; (7) On the Rotation of the Wind between oppositely directed air-currents in the Southern Indian Ocean, by the same; (8) On the connection between the relative Positions and Directions of air-currents and the Barometric Pressure in the Southern Indian Ocean, by the same; (9) Storm Warnings, Cyclone at Mauritius of 20th March 1879, by the same; (10) Archæology in India with special reference to the works of Dr. R. L. Mitra, by James Fergusson, C. I. E., F. R. S., LL. D., &c.

3. From Charles Meldrum, Esq.,—Some remarks on Cyclones, especially those of the Indian Ocean near Mauritius, by the Venerable Archdeacon Mathews, M. A.

4. From the Bengal Government,—(1) Report of the Alipore Reformatory School for the year 1883; (2) Administration Report of the Hazaribagh Reformatory School for the year 1883.

5. From the Trustees, British Museum,—London Catalogue of Birds in the British Museum, vol. IX.

6. From the Institution of Civil Engineers, London,—The Practical applications of Electricity.

7. From the Argentine Republic,—La Republique Argentine, relativement à l' Emigration Européenne, Renseignement Statistique-Géographique du pays et de ses ressources, sous tous leurs aspects, by François Latzina.

8. From the Home Department,—(1) Selections from the Records of the Government of India, Home Department, Nos. 191 and 195, being reports on Publications issued and registered in British India during the years 1881 and 1882; (2) Parliamentary Papers: i, Supplementary Estimate of the fifth instalment of the Afghan War Grant-in-aid; ii, Return containing correspondence between the Government of India and the Secretary of State on the constitutional robustness of Civil Service candidates; (3) Review of the Forest Administration in British India for the year 1882-83, by W. Schlich, Ph. D.

9. From the Chief Commissioner, Central Provinces,—Report on the Police Administration of the Central Provinces for the year 1883.

10. From the Meteorological Reporter to the Government of Bengal,—Administration Report of the Meteorological Department for the year 1883-84.

11. From the Director of Public Instruction,—Report on the search for Sanskrit MSS. in the Bombay Presidency during the year 1882-83.

12. From the India Office, London,—Sacred Books of the East, Vol. XV, The Upanishads by Prof. Max Müller; Vol. XXI, The Saddharma Pundarika or the Lotus of the True Law, by the same.

13. From the Royal Asiatic Society, Ceylon Branch,—Translations, from the Pali, of Jatakas 41—50, by the Bishop of Colombo.

14. From the Madras Government,—Annual Administration Report of the Forest Department of the Madras Presidency for the year 1882-83.

The following gentlemen are candidates for election at the next meeting:

E. C. Cotes, Esq., 1st Assistant to the Superintendent, Indian Museum, proposed by J. Wood-Mason, Esq., seconded by Major J. Waterhouse.

E. J. Jones, Esq., Geological Survey, proposed by Dr. W. King, seconded by R. D. Oldham, Esq.

The COUNCIL proposed that Mr. F. Moore, F. Z. S., A. L. S. be elected an associate member of the Society on account of his contributions to Indian Entomology.

The SECRETARY reported that the following gentlemen have intimated their desire to withdraw from the Society:

The Hon'ble H. T. Prinsep.

Syud Amir Hussein, Khan Bahadur.

The COUNCIL reported that an invitation had been received from the President of the American Association for the Advancement of Science, for representatives of the Society to attend the annual meeting of the Association to be held at Philadelphia, commencing 3rd September, 1884.

The COUNCIL have resolved to ask the Government of India to permit Major J. Waterhouse to be deputed to represent the Society, but Major Waterhouse has reported that he is unable to obtain the necessary leave.

The VICE-PRESIDENT announced the death of Dr. H. W. M'Cann, General Secretary to the Society, and said the Council desire to place on record their sense of the loss the Society has sustained by his untimely death, and their deep regret at the sad event that has deprived it of an energetic and valuable officer and a most esteemed colleague.

Mr. TAWNEY gave the following account of Dr. M'Cann's career:

It is no doubt well-known to all here that the General Secretary's work, though necessarily of an unostentatious character, takes up a good deal of time, and makes considerable demands upon the energies of the holder of the office, who is usually a person sufficiently occupied with other business. Such was eminently the case with Dr. M'Cann, who, in addition to his Professorial duties, discharged during the last two years of his life those of Secretary to the Committee of the Economic Museum. I believe that I am only uttering the opinion of all the Members of the Society who have seen anything of Dr. M'Cann's work here, when I say that he displayed in it the same alacrity and business capacity, as characterized his labours in other fields. It is only necessary, (to give one instance out of many,) to examine the Index which he compiled for our Centenary Number, to understand the self-denying industry with which he devoted himself to the business of the Society.

He was born in 1853 at Kirkcudbright in Scotland, and was educated in the Liverpool Institute. In 1869, at the age of 16, he came out first of the first class in the Senior Oxford Local Examination. In the same year he entered into the first competition for the Whitworth Scholarship, and, though he failed in the main, he had the satisfaction of surpassing every candidate within two years his senior. In the following year (1870) he brilliantly distinguished himself in this Examination. Not only did he obtain a scholarship at, I believe, the lowest age at which one has ever been taken, but in the Examination in Mathematics, he gained 1st class Honours in each of the three grades, and in the two higher, was first in order of merit. The extraordinary nature of this achievement will be appreciated, when it is considered that of the thousands who in the last 15 years have competed for these scholarships, only one has equalled Dr. M'Cann's success, and he was three or four years his senior.

In June of the same year he matriculated at the University of London from the Liverpool Institute, and his name appears first in order of merit in the Honour List. In 1871 he took his first B. Sc. degree with honours at the University of London, standing first in the First class in Mathematics and Mechanical Philosophy, and he also gained the University Scholarship in Mathematics. In the same year he obtained a Minor Scholarship at Trinity College, Cambridge, and proceeded there in October. In 1873 he was elected a scholar of Trinity. He was prevented by illness from going up for the degree of Bachelor of Arts in 1875, but was bracketed seventh wrangler in the Examination of 1876. He was for some time a Master at Harrow. He also took an active part as lecturer under the University extension scheme.

In 1879 he received an appointment in the Bengal Educational Department. In 1881 he was elected Honorary Secretary of the Asiatic Society. He was for some time a Trustee of the Indian Museum on the part of the Society.

In May 1882 he was appointed to officiate as Secretary to the Central Committee for the management of the Economic Museum. In this capacity very heavy work devolved upon him. He had to "work off the arrears which had accumulated in the financial and routine business of the office and to put the specimens into general order previous to throwing the Museum open to the public." This was effectually done, and the Museum was thrown open to the public on the 25th of July 1882.

It was also Dr. M'Cann's duty as Secretary to the Committee of the Economic Museum to compile a Report on the Dye-Stuffs of Bengal, based on returns received from the Commissioners of Divisions, and re-

plies to further enquiries made by Mr. Locke, for whom Dr. M'Cann was officiating. The report appeared in August 1883. It was favourably reviewed in *Nature*, and is, I believe, admitted to be a work of permanent value. Considering the distracting nature of Dr. M'Cann's various occupations, and that the only special assistance he received was that of a clerk employed for two months in making abstracts of the correspondence, it is a marvel that he was able to complete so difficult a task in so short a time.

During the Calcutta International Exhibition he was in charge of the Educational section; and he was subsequently entrusted with the duty of arranging the specimens of the Economic Museum in the permanent annexe of the Indian Museum in Chowringhee. He had lately assumed the editorship of the *Calcutta Review*, which would no doubt in his hands have maintained or perhaps increased its high reputation. But this hope with many others has been frustrated by his untimely death.

Dr. M'Cann was very successful as a teacher. He possessed a remarkable power of popularizing a subject. He delivered one or two admirable lectures in the Bethune Society and before the Muhammadan Literary Society. It has been remarked that in lecturing before the latter Society, he was by no means disconcerted by the necessity of having his lecture rendered clause by clause into Urdu. Indeed his patience and good temper were remarkable. It was due to the latter qualities quite as much as to his Scientific ability that he was so much beloved by the students of the Presidency College, who have recently held a meeting for the purpose of erecting a memorial in his honour.

Dr. M'Cann was no doubt a little over-worked for the two last months of his life, during which he was engaged in arranging the collections of the Economic Museum in the premises of the Indian Museum.

On Friday the 20th of June he went to Raneegunge for change of air. On Saturday the 21st he addressed a letter to a member of the Society in which he said that he was sadly in need of rest, but expressed a belief that two or three days' indolence would make him fit for work again. In the night of Saturday he was seized with cholera and died in the middle of the day on Sunday.

The COUNCIL reported that Mr. F. E. Pargiter had been appointed General Secretary, and Member of Council and Trustee of the Indian Museum in place of Dr. H. W. M'Cann and that Major J. Waterhouse had kindly offered to carry on the work pending Mr. Pargiter's acceptance.

The COUNCIL further reported that Mr. Pargiter's acceptance has been received.

The VICE-PRESIDENT then said: "It only remains for me to say that I propose with the consent of the members present to take as read the paper announced for this evening, and to close the meeting as a mark of respect for the memory of our late Secretary, Dr. M'Cann. I also propose that a letter of condolence should be sent to Mrs. M'Cann on behalf of the Society."

The paper announced for the evening was:

Account of the South-West Monsoon Storms of the 26th June to 4th July and of 10th to 15th November 1883.—*By* JOHN ELIOT, M. A., *Meteorological Reporter to the Government of Bengal.*

It will be published in full in Journal, Part II, No. 2.

LIBRARY.

The following additions have been made to the Library since the meeting held in June last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. John Hopkins University,—American Chemical Journals, Vol. VI, No. 2.

———. ———. American Journal of Mathematics, Vol. VI, No. 4.

Batavia. Bataviaasch Genootschap van Kunsten en Wetenschappen,—Notulen, Vol. XXII, No. 1.

———. ———. Tijdschrift, Vols. XXIX, No. 4; XXX, Nos. 1, 2.

Berlin. K preuss. Akademie der Wissenschaften,—Sitzungsberichte, Nos. 38—43, 1883, and Index for 1883.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 9—11, 1884.

Calcutta. Original Meteorological Observations,—January 1884.

Edinburgh. Botanical Society,—Transactions and Proceedings, Vol. XV, Part 1.

———. Royal Society of Edinburgh,—List of Members, November, 1883.

Frankfurt. Senckenbergische Naturforschende Gesellschaft,—Abhandlungen, Vol. XIII, No. 3.

Ithaca. The Library of Cornell University,—Vol. I, No. 9.

Lahore. Anjuman-i-Punjab,—Journal, Vol. IV, Nos. 22—26.

Leipzig. Deutsche Morgenländische Gesellschaft,—Wissenschaftlicher Jahresbericht, 1878.

———. ———. Zeitschrift, Vol. XXXVII, No. 4.

London. Academy,—Nos. 628—631, 1884.
———. Athenæum,—Nos. 2951—2954, 1884.
———. Institution of Civil Engineers,—Minutes of Proceedings, Vol. LXXV.
———. Nature,—Vol. XXX, Nos. 759—762.
———. Royal Geographical Society,—Proceedings, Vol. VI, No. 5, May, 1884.
———. Royal Society,—Proceedings, Vol. XXXVI, No. 229.
———. Society of Telegraph Engineers,—Journal, Vol. XIII, No. 51.
Munich. Repertorium der Physik,—Vol. XX, Nos. 3, 4.
Paris. Société d' Anthropologie,—Bulletin, Vol. VII, (ser. III) No. 1.
——. Société de Géographie,—Comptes Rendus des Séances, No. 11, 1884.
Pisa. Società Toscana di Scienze Naturali,—Atti, Vol. VI, Fasc. 1.
——. ———. ———. Processi Verbali, Vol. IV, 2nd March, 1884, and Index to Vol. II.
St. Petersburgh. Académie Impériale des Sciences,—Bulletin, Vols. XXVIII, No. 4; XXIX, No. 1.
————————. ————. Mémoires, Vol. XXXI, No. 9.
Trieste. Società Adriatica di Scienze naturali,—Bollettino, Vol. VIII.
Turin. R. Accademia della Scienze,—Atti, Vol. XIX, No. 3.
Vienna. K. K. Central-Anstalt für Meteorologie und redmagnetismus, —Jahrbücher, 1880.
———. K. K. Geologischen Reichsanstalt,—Jahrbuch, Vols. XXXIII —XXXIV.
———. ————————. Verhandlungen, Nos. 10—18, 1883; 4, 1884.
———. Ornithologische Verein,—Mittheilungen, Vol. VIII, No. 5.
Yokohama. Asiatic Society of Japan,—Transactions, Vol. XII, Part 2.

Books and Pamphlets,

presented by the Authors, Translators, &c.

Fergusson, James. Archæology in India with special reference to the works of Dr. R. L. Mittra. 8vo. London, 1884.

Giuseppe, Dr. Badaloni. Il Morso della Vipera ed il Permanganato di Potassa (with an English translation). 8vo. Bologna, 1884.

La Vipera ed il suo Veleno. (The Viper and its Venom). 8vo. Bologna, 1884.

Meldrum, Charles. Monthly Notices of the Meteorological Society of Mauritius. New series, Nos. 1, 9-12. Fol. Mauritius, 1876-80.

On the connection between the relative Positions and Directions of Air Currents and the Barometric Pressure in the Southern Indian Ocean. 8vo. Mauritius, 1869. Pam.

On the Relations of Weather to Mortality and on the Climatic effects of Forests. Fcp. Mauritius, 1881.

On the Rotation of the Wind between oppositely directed Air Currents in the Southern Indian Ocean. 8vo. Mauritius, 1869. Pam.

Proceedings and Transactions of the Meteorological Society of Mauritius. Vols. IV—VI. 8vo. Mauritius, 1859-64.

Storm Warnings—Cyclone at Mauritius of 26th March, 1879. 8vo. Mauritius, 1879. Pam.

Synoptic Weather Charts of the Indian Ocean for February 1861. Fol. Mauritius, 1881.

ROY, PROTAP CHANDRA. The Mahábhárata, translated into English Prose. Part VIII. 8vo. Calcutta, 1884.

MISCELLANEOUS PRESENTATIONS.

CUNNINGHAM, GENERAL A. Report of a Tour in the Central Provinces and Lower Gangetic Doab in 1881-82. (Archæological Survey Report, Vol. XVII.) 8vo. Calcutta, 1884.

ARCHÆOLOGICAL SURVEY OF INDIA.

LATZINA, FRANCOIS. La Republique Argentine, relativement à l' Emigration Européenne, Renseignement Statistique, Géographique du pays et de ses ressources, sous tous leurs aspects. Fcp. Buenos Aires, 1883.

ARGENTINE REPUBLIC.

Administration Report of the Hazaribagh Reformatory School for the year 1883. Fcp. Calcutta, 1884.

Indian Forester. Vol. X, No. 5, May, 1884 and Supplement, April, 1884. 8vo. Roorkee, 1884.

Report of the Alipore Reformatory School for the year 1883. Fcp. Calcutta, 1884.

BENGAL GOVERNMENT.

Catalogue of Birds in the British Museum. Vol. IX, 8vo. London, 1884.

BRITISH MUSEUM.

Report on the Police Administration of the Central Provinces for the year 1883. Fcp. Nagpur, 1884.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Report on the Search for Sanskrit MSS. in the Bombay Presidency during the year 1882-83. Fcp. Bombay, 1884.

DIRECTOR OF PUBLIC INSTRUCTION, POONAH.

Parliamentary Papers :—I, Supplementary Estimate of the fifth Instalment of the Afghan War Grant-in-aid. II, Return containing correspondence between the Government of India and the Secretary of State on the constitutional robustness of Civil Service Candidates. Fcp. London, 1884.

SCHLICH, DR. W. Review of the Forest Administration in British India for the year 1882-83. Fcp. Simla, 1884.

Selections from the Records of the Government of India, Home Department, Nos. 191 and 195, being Reports on Publications issued and registered in British India during the year 1881-82. 8vo. Calcutta, 1883-84.

HOME DEPARTMENT.

MULLER, PROF. MAX. Sacred Books of the East, Vol. XXI. The Saddharma Pundarîka or the Lotus of the True Law. 8vo. London, 1884.

———. Sacred books of the East, Vol. XV. The Upanishads, Part II. 8vo. London, 1884.

INDIA OFFICE, LONDON.

The Practical Applications of Electricity—a Series of Lectures delivered at the Institution of Civil Engineers. Sessions 1882-83. 8vo. London, 1884.

INSTITUTION OF CIVIL ENGINEERS, LONDON.

Annual Administration Report of the Forest Department of the Madras Presidency for the year 1882-83. Fol. Madras, 1884.

MADRAS GOVERNMENT.

MATHEWS, THE VENERABLE ARCHDEACON. Some remarks on Cyclones, especially those of the Indian Ocean near Mauritius. 8vo. Mauritius, 1882.

CHARLES MELDRUM, ESQ.

Administration Report of the Meteorological Department for the year 1883-84. Fcp. Calcutta, 1884.

International Meteorological Observations, March, 1883; March, 1884. 4to. Washington, 1884.

METEOR. REPORTER TO THE GOVERNMENT OF INDIA.

Translations from the Pali of Jatakas 41-50, by the Bishop of Colombo. 8vo. Colombo, 1884.

ROYAL ASIATIC SOCIETY (CEYLON BCH.) COLOMBO.

PERIODICALS PURCHASED.

Allahabad. Punjab Notes and Queries,—Vol. I, No. 9, June, 1884.

Berlin. Deutsche Litteraturzeitung,—Vol. V, Nos. 16, 17.

Calcutta. The Indian Medical Gazette,—Vol. XIX, No. 6, June, 1884.

Cassel. Botanisches Centralblatt,—Vol. XVIII, Nos. 2—4.

Geneva. Archives des Sciences Physiques et Naturelles,—Vol. XI, No. 5.

Göttingen. Gelehrte Anzeigen,—Nos. 9, 10, 1884.

Leipzig. Annalen der Physik und Chemie,—Vol. XXII, No. 1.

———. ———. Beiblätter,—Vol. VIII, Nos. 4, 5.

Leipzig. Hesperos,—Vol. III, No. 71.
———. Literarisches Centralblatt,—Nos. 17, 18, 1884.
London. Annals and Magazine of Natural History,—Vol. XIII, No. 77, May, 1884.
———. Chemical News,—Vol. XLIX, Nos. 1277-1280.
———. Entomologist,—Vol. XVII, No. 252, May, 1884.
———. Entomologist's Monthly Magazine,—Vol. XX, No. 240, May, 1884.
———. Journal of Botany,—Vol. XXII, No. 257, May, 1884.
———. Journal of Science,—Vol. VI, No. 125, May, 1884.
———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XVII, No. 107, May, 1884.
———. Messenger of Mathematics,—Vol. XIII, No. 11, March, 1884.
———. Nineteenth Century,—Vol. XV, No. 87, May, 1884.
———. Publishers' Circular,—Vol. XLVII, Nos. 1120, 1121.
———. Quarterly Journal of Microscopical Science,—Vol. XXIV, No. 94, April, 1884.
———. Society of Arts,—Journal, Vol. XXXII, Nos. 1643—1646.
Paris. Académie des Sciences,—Comptes Rendus des Séances,—Vol. XCVIII, Nos. 18—21.
———. Annales de Chimie et de Physique,—Vol. II. (6th Ser.) May, 1884.
———. Journal des Savants,—May, 1884.
———. Revue Critique,—Vol. XVII, Nos. 20—23.
———. Revue des Deux Mondes,—Vol. LXIII, No. 1.
———. Revue Scientifique,—Vol. XXXIII, Nos. 20—23.

BOOKS AND PAMPHLETS PURCHASED.

BOULGER, DEMETRIUS CHARLES. History of China, Vol. III. 8vo..London, 1884.
Report of the British Association for the Advancement of Science for 1883. 8vo. London, 1884.
TEMPLE, CAPT. R. C. The Legends of the Panjab, No. XII—July, 1884. 8vo. Bombay, 1884.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR AUGUST, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th August, 1884, at 9·15 P. M.

D. WALDIE, ESQ., Vice President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Geological Survey of India,—Memoirs of the Geological Survey of India, Palæontologia Indica, Series XIV, Vol. I, Part III.

2. From the Chief Commissioner, Central Provinces,—Report on Government Charitable Dispensaries in the Central Provinces for the year 1883; (2) Report on the Jails of the Central Provinces for the year 1883; (3) Report on the working of the Registration Department in the Central Provinces for the year 1883; (4) Report on Sugar Production in the Central Provinces for the year 1882-83; (5) Report on the Nagpur Experimental Farm for 1883-84.

3. From the Director of Public Instruction, Bangalore,—Nága Varmmá's Karnátaka Bhásha Bháshana, the oldest grammar extant of the Kannada language. By Lewis Rice, M. R. A. S.

4. From Prince Roland Bonaparte,—Les Premières Nouvelles concernant l' Eruption du Krakatau en 1883; (2) Collection Anthropologique du Prince Roland Bonaparte : Peaux Rouges, Hindous, Atchinois, (Photographs).

5. From Dr. A. L. Donnadieu,—La Photographie appliquée aux Sciences Biologiques et le Physiographe Universel du Dr. A. L. Donnadieu, construit par J. B. Carpentier.

6. From Babu Brojendro Lall Doss,—Asiatic Researches, Popular Edition, Vol. I, No. 2.

7. From the Authors,—The Shrines of Sitakund in the District of Chittagong in Bengal by Adharlal Sen, B. A.; (2) Mahabharata,

Parts VIII and IX by Protap Chunder Roy; (3) Early History of the Dekkan, down to the Mahomedan conquest by Ram Krishna Gopal Bhandarkar, M. A.; (4) Notes on the Prevailing Castes of Gurhwal by Pundit Gunga Datt Upreti; (5) The Cloud Messenger of Kálidás (translated into Hindi Verse with notes and a Vocabulary) by Raja Lakshman Sinh; (6) The Mountain system of the Himalaya and neighbouring Ranges of India by Lt.-Col. H. H. Godwin-Austen, F. R. S.

8. From the Foreign Department,—Notes on Afghanistan and part of Beluchistan, Section IV, by Major H. G. Raverty.

9. From the Bengal Government,—Returns of the Rail-borne Traffic of Bengal during the 1st quarter of 1884; (2) Annual Report on Inland Emigration for 1883; (3) Annual Report on Jail Administration in Bengal for 1883; (4) Annual Report on the Police Administration for the Town of Calcutta and its suburbs for the year 1883.

10. From the Government, North-West Provinces,—The Gazetteer of the N. W. Provinces, Vol. XI, The Himalayan Districts of the N. W. Provinces of India, Part II; (2) Statistical, Descriptive and Historical Account of the N. W. P. of India, Vol. XIV, Benares, Mirzapur and Jaunpur.

11. From R. Accademia della Scienze di Torino,—Historical and Bibliographical notice of the 1st Centenary of the Accademia della Scienze di Torino, 1783-1883.

12. From G. V. Jugga Row's Observatory,—Results of the Meteorological Observations, 1883, by A. V. Narsing Row.

13. From the Zoological Society of London,—Catalogue of the Library of the Zoological Society of London (Supplement to August, 1883).

14. From the Trustees, Australian Museum, Sydney,—Report of the Trustees of the Australian Museum for the year 1883.

15. From the Surveyor General of India,—General Report of the Survey of India Department for 1882-83.

16. From the Department of Public Instruction, Batavia,—Minhâdj At-Tâlibîn, Le Guide des Zélés Croyants, Manuel de Jurisprudence Musulmane, by L. W. C. Van den Berg.

17. From the Meteorological Reporter to the Government of India,—Report on the Meteorology of India in 1882, by H. F. Blanford, F. R. S.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :—

1. E. C. Cotes, Esq.
2. E. J. Jones, Esq.

The following gentleman was elected an Associate Member:

F. Moore, Esq., F. Z. S., F. L. S.

The following gentlemen are candidates for election at the next meeting:

William Henry Miles, Esq., proposed by J. Wood-Mason, Esq., seconded by Dr. W. King.

J. A. Anderson, Esq., proposed by Dr. D. Waldie, seconded by Major J. Waterhouse.

Kumar Inder Chunder Singh of Paikparah, proposed by Nawab Abdul Latif Khan, Bahadur, seconded by Prince Mirza Jehan Kader, Bahadur.

The SECRETARY reported that Babu Ram Krishna had intimated his wish to withdraw from the Society.

The SECRETARY read a letter from Mr. A. M. Holwell, dated Quebec, 24th May, 1884, forwarding copies of two Photographs of the late Governor Holwell and requesting that a copy of Mr. Bayne's paper on the further excavations of Old Fort William may be sent to him when published.

The COUNCIL reported:—(1) that the following gentlemen had been elected Members of the Philological Committee:

J. Boxwell, Esq.; Moulvie Khodabaksh Khan, Bahadur; Lt.-Col. H. S. Jarrett.

(2) That Dr. A. F. R. Hoernle had resumed his duties as Philological Secretary.

On the proposal of the President a vote of thanks was unanimously passed to Mr. C. H. Tawney for his services to the Society as Offg. Philological Secretary.

The SECRETARY reported that, on the recommendation of the Philological Committee, the Council had sanctioned the publication in the Bibliotheca Indica of the following 11 Sanskrit and 6 Persian Works, *viz.*:—

1. *Sanskrit.*

1. The *Nyáya Vártika* of *Udyotkara Miśra*. This work gives an exposition of the meaning of what is said, of what is left unsaid, and of what is ill or imperfectly said in the Nyáya Aphorisms of Gautama. It is held in high repute, but is exceedingly scarce. There are three or four MSS. available, one of which is an excellent one, old and very correct. The work will be edited by Pandit Vindhyeśwarí Prasáda Dviveda of Benares.

2. The *Tantra Vártika.* This is a work similar to the preceding one, and refers to the Mímáṃsá doctrine. It is likewise highly esteemed, and several MSS. of it are accessible. It will be edited by Pandit Maheśa Chandra Nyáyaratna, Principal of the Sanskrit College, as soon as he has completed his edition of the Mímáṃsá text.

3. The *Kála Viveka,* by *Jímúta Váhana,* the author of the Dáyabhága. It is a treatise on appropriate times for religious ceremonies. Its astronomical disquisitions are of great value, and it is accepted as the leading authority on the subject it treats of. It will be edited by Pandit Madhu Súdana Tarkaratna, a Professor of the Sanskrit College, from several MSS.

4. The *Vivádа Ratnákara,* a digest of the laws relating to Jurisprudence. It is held in high repute. Some six or seven MSS. are available, and the edition will be prepared by Pandit Dína Nátha Nyáyaratna, a Professor of the Sanskrit College.

5. The smaller commentaries of the Vedánta Sútra. There are five of these: 1st, *Vallabha Bháshya,* which expounds the system of Epicurianism of the Hindús; 2nd, *Rámánúja Bháshya,* which holds the human soul to be a creation of the Divinity; 3rd, *Vishṇu Bháshya,* which holds that the human soul is a reflection of the Divine one; 4th, *Nemárka Bháshya,* which holds the human soul to be subordinate to the Divine one, and 5th, the *Mádhava Bháshyá,* which teaches that the human soul is essentially and eternally distinct from the Divine one. These different theories have been all deduced from the Vedánta, and illustrate in a remarkable manner the different phases of philosophical thought among the Hindús. They are in fact protests against the theory of Sankara. All these five works are short; but at present there are only in the case of the first two mentioned sufficient MSS. available to proceed to an edition. These two editions will be entrusted to Pandit Hema Chandra Tarkaratna and Pandit Rámánátha Tarkaratna respectively.

6. The *Matsyá Puráṇa,* which will form a sequel to Dr. R. Mitra's edition of the Váyu Puráṇa which is now nearly finished. It will be edited by Pandit Hṛishi Keśa Bhaṭṭáchárya, a Professor of the Sanskrit College.

7. The *Kosha Mádhavíya* of *Mádhava Áchárya.* This will form a sequel to the same author's Parásara Mádhava, which is now in course of publication. It will be edited by Pandit Chandrakánta Tarkálankár, from a large number of MSS.

8. The *Yoginí Tantra,* containing a history of Assam and Kúch Bihár. It will be edited by Mr. G. A. Grierson, C. S., from six MSS.

9. The *Nárada Smṛiti,* one of the Standard authorities on Hindú Law. It is unique in interest, because no other Smṛiti is known to

contain equally copious rules on judicial procedure and civil law. It will be edited by Professor J. Jolly, of Würzburg, from six good MSS. The text will be accompanied by the commentary of Asakáya, as far as the latter goes.

10. The *Svayambhu Puráṇa* a Buddhist history of Nepal and 11, the *Ashṭasáhasrika Prajñá Páramitá.* The Society possesses one MS. of each of these two works; that of the latter being very old and remarkably correct. As soon as one or two more MSS. have been procured, their publication will be taken in hand.*

2. *Persian.*

1. *The Safarnámah,* by *Maula Sharfuddín Álí Yazdí.* It gives the history of Tímúr, and is a large work. There are six MSS. in the Society's library, from which it will be edited by Maulvi Illáhdád, late 2nd Professor of the Calcutta Madrasah.

2. The *Táríḳh i Fírúz Sháhí,* by Shams i Shiráz Ufíf, a history of Tímúr Sháh. Another history, bearing the same name and written by Zíá o Barní has already been published by the Society. This second work is an exceedingly rare one, and, if anything, more valuable than the one already published. There is at present one MS. available, which belongs to the Society; but there is every hope of one or two more being procurable from Lucknow and Rámpur. As soon as these have been obtained, the edition will be proceeded with by Maulví Abúl Khair, Professor of Arabic and Persian in the Madrasah College, to whom it has been entrusted.

3. An English annotated translation of the first volume of the *Muntaḳhab ut Táwáríḳh,* by Abdúl Qádir, the Badáoní. It will be prepared uniformly with Mr. Lowe's translation of the 2nd volume, which is at present in course of publication. Maulvi Abúl Khair, of the Madrasah College, has been entrusted with the work.

4. The *Tájúl Maasir* by *Hasan Nizámí,* one of the oldest Muhammadan histories of India, treating of the reigns of Qutbuddín Ibak and Shamsuddín Iltimish.

5. The *Táríḳh i Wassaf* by the so-called *Wassáf ul Hazrat,* a sort of general history of the Muhammadan world.

6. The *Tuzuk i Tímúrí,* a Persian translation of the Turkí Autobiography of Tímúr.

* A twelfth work, the *Rasagangádhara,* a treatise on Rhetoric, had been sanctioned by the Council, and was to have been edited by Pandit Nilmani Mukherjea, a Professor of the Sanskrit College, but it was withdrawn, on its being subsequently discovered that an edition of it was already in preparation at Benares. It is now proposed to substitute the *Kúrma Puráṇa* in its place, to be published by the same editor, if a sufficient number of MSS. can be procured.

At present only one copy of each of the last three works is available. All three are in the possession of the Society. A search is being made for other MSS., after receipt of which the editions will be taken in hand.

The SECRETARY reported that the following coins had been acquired under the Treasure Trove Act:

5 gold coins found at Chindwarrah, Nerbudda District, Central Provinces;

5 silver coins found at Fatehgarh in the Furrukhabad District, N. W. P.

With reference to the 5 gold coins Dr. Hoernle observed that one of the coins, specimen No. 1, was of the reign of Alamgir II, Azíz-ud-dín, that it bore no date and was minted at Sháhjehánábád. Two others were of the reign of Aurangzíb, dates 1106 and 1110, and bore the names of the mints of Bíjapúr Dár-uz-Zafar and Khujastah Bunyád or Aurangábád. The fourth coin was of the reign of Muhammad Sháh of the year 1144 and bore the mint mark of Akbarábád. This is like the coin of Muhammad Furrukh-sír, in Marsden's Num. Orient. p. 662, No. DCCCCXII. The fifth was also a coin of Muhammad Sháh, of the year 11[43], and had the mint mark of Sháhjehánábád. All these are apparently new or unpublished types except the last, which is described in Marsden's Numismata Orientalia, p. 667, No. DCCCCXXI.

The PHILOLOGICAL SECRETARY exhibited 15 silver coins of the Independent Muhammadan Rulers of Bengal in the 16th Century, forwarded by Mr. L. J. K. Brace, Curator of the Herbarium, Royal Botanic Garden, Sibpur, and said that the collection contained the following coins:

1. One of Shihábuddín Báyazíd Sháh (808-817 A. H.), of the kind described in J. A. S. B., Vol. XLII, p. 263, No. 2. Date illegible.

2. Two of Jaláluddín Muhammad Sháh (817-834 A. H.), of the kind described *ibid.*, p. 267, No. 1. Dates 823, and 821; but the latter is uncertain.

3. Three of Náṣiruddín Mahmúd Sháh I, (846-864 A. H.), of the kind described in J. A. S. B., Vol. LII, p. 218, No. 3. Dates 863 and 86[0]; the latter uncertain.

4. Four of Ruknuddín Bárbak Sháh (864-879 A. H.), Muzaffar type, of the kind described *ibid.*; p. 219, No. 13. Three bear date 867; on one it is illegible.

5. One of the same, Mujáhid type, of the kind described *ibid.*, p. 219, No. 12; date quite distinctly 864. This shows that the date of the previously described specimens should also be read 864; and it

moreover settles the year of succession of Bárbak Sháh. The earliest date of his reign, hitherto known, was 865, while the latest of his father Mahmúd Sháh I, was 864. In the last named year the change must have taken place.

6. One of the same, Muzaffar type, of the kind described in J. A. S. B., Vol. XLII, p. 275. Date, if any, illegible.

7. One of Jaláluddín Fateh Sháh (886-892 A. H.), of the kind described in J. A. S. B., Vol. XV, p. 329, No. 15. Date 890.

8. One of Shamsuddín Abúl Nazr (896-899 A. H.), of the kind described in J. A. S. B., Vol. XV, p. 331, No. 19. Date 896.

9. One specimen, entirely illegible.

The PHILOLOGICAL SECRETARY also exhibited three gold Gupta coins, and some ancient silver and brass objects sent by Colonel Malcolm G. Clerk for the inspection of the Society.

Col. Clerk wrote—"I am sending by Post Registered a small box containing the following two brass articles excavated at Acra near Bunnoo in the Panjáb. These may be kept in the Museum if of any value, one looks like a seal.

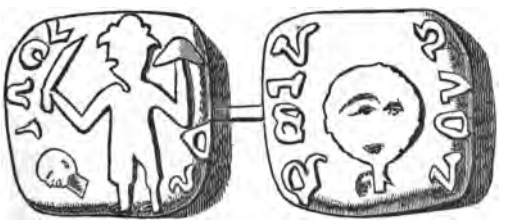
"The other things I wish returned, namely,

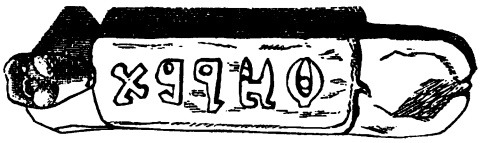
"One square silver coin and a piece of silver with some letters on it. These were said to come from the Amú daryá. What are the inscriptions on them? Is the coin known?

"3 Gold Guptas, each different, they are like some shewn in Prinsep but I cannot make out the inscriptions. Can you kindly read them for me?

"The one *without* the eye for necklace came from the Rewa Rajah's treasury where I bought it, and the other two were sold me by a sepoy who wore them round his neck. I suppose they are all common."

Dr. Hoernle said the coin without the eye from Rewá was one of Chandra-Gupta II, Archer type, Class II, and weight 110·55 grains, with double क्ष (see V. A. Smith's article in Journal, Vol. LIII, p. 180). Of the other two coins, one was also of Chandra Gupta II, Lancer type, weight 130·92 (*ibid.*, p. 182). *Obv.* legend भगवत महार[ाजधिराज श्री चन्द्रगु]प्तः. Of the letters within brackets only the lower portions, about two-thirds, are visible. *Rev.* अजित विक्रम. The third coin is one of Skanda Gupta, Archer type (of the kind classed as doubtful by Mr. Smith, p. 200), weight (157·87 grains). *Obv.* legend illegible; *rev.* क्रमादित्यः Of the two silver pieces, (see wood-cuts)





one was a heavy rude square coin, with the figure of a person standing on the *obv.*, and a wheel (?) on the reverse. The other was a narrow oblong piece, ornamented with a ram's head. Both pieces bore rude inscriptions of a similar character, which at first sight appeared to be Greek, though they might be Páli. Neither General Cunningham nor any one else had been able to decipher them. Of the two brass objects, one seemed to be a seal, surmounted by a large-horned ram.

The Philological Secretary read the following note on a point of Panjábí Phonetics from Captain R. C. Temple, B. S. C.

"Herewith a note, which if you have not already received may be of use to you. I had often noticed the facts stated therein, but thinking my ear misled me I passed them over, but now I am convinced of their accuracy. When aspirated sonants are *final* the aspirate is transposed by Panjábís, thus: samáhad = samádh: láhab = lábh. This is an almost invariable rule. Even when *not* final the transposition takes place, *e. g.* sáhaṃjí = sáṃjhí. It is never true of surds, *e. g.*, they never say ráhak = rákh, or rahat = rath.

"Instances of common words used in this way are—

byáhad = byádh	dúhud = dúdh
śráhad = śrádh	bihid = bidh
áhad = ádh	sáhad = sádh
láhab = lábh	ráhad = rádh
lohob = lobh	meheg = megh
kahaṛwá = kaṛhwá	bohoj = bojh
bahaṛná = baṛhná	sáhaṃj = sáṃjh
pahaṛ = paṛh	máhaṃj = máṃjh
ṭeheṛá = ṭeṛhá	báhaṃj = báṃjh
sáham'ne = sámh'ne	samáhad = samádh
krohod = krodh	báhag = bágh

"The harmonic sequence of the vowels is notable in the above. It refers only to pronunciation, *not* to spelling.

"Again when *h* is final, as it often is in Panjábí imperatives, the vowel preceding is harmonically repeated in pronunciation, I believe invariably, *e. g.*:—

snehe = sneh	sohoná = soh'ná
nehe = neh	ehe = eh (yeh)
áhá = áh (áo)	mihi = mih (rain)

byáhá = byáh
oho = oh (wah)
láhá = láh (láo)
mohoná = moh'ná
gráhá = gráh (mouthful)
sáhá = sáh
meṃhe = meṃh (rain)

"The following sentence shows a treatment of the future suffix I have not met with before. It is a common proverb and well-known in the form given,

दो लड़ेंगे तो एक गिरे दो गा

i. e., 'when two fight one must fall.'"

The paper by Mr. J. Cockburn on the recent Extinction of a species of Rhinoceros in the Rajmehal Hills and *Bos Gaurus* in the Mirzapur district, which was announced to be read at this meeting, was deferred.

Library.

The following additions have been made to the Library since the Meeting held in July last.

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presented by the respective Societies and Editors.

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Leipzig. Deutsche Morgenländische Gesellschaft,—Abhandlungen für die Kunde des Morgenlandes, Vol. VIII, No. 3.

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———. American Philosophical Society,—Proceedings, Vol. XXI, No. 114.

Pisa. Società Toscana di Scienze Naturali,—Atti, Processi Verbali, Vol. IV, 4th May, 1884.

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Turin. Osservatorio della Regia Universita,—Bollettino, Vol. XVIII, 1883.

———. R. Accademia della Scienze,—Atti, Vol. XIX, Nos. 1 and 4.

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Vienna. Ornithologische Verein,—Mittheilungen, Vol. VIII, Nos. 6, 7, and supplement, Nos. 2-4.

Washington. Philosophical Society,—Bulletin, Vol. VI.

———. War Department, Army Signal Service,—Professional Papers, Nos. 8-12.

Wellington. New Zealand Institute,—Transactions and Proceedings, Vol. XVI.

Yokohama. Deutsche Gesellschaft für Natur und Völkerkunde Ostasiens,—Mittheilungen, Table of Contents of Vol. II and Table of Contents and Index of Vol. III.

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———. Publishers' Circular,—Vol. XLVII, Nos. 1122-1124.
———. Society of Arts,—Journal, Vol. XXXII, Nos. 1647-1652.
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——. Revue des Deux Mondes,—Vol. LXIII, No. 2.
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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR SEPTEMBER, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd September, 1884, at 9·15 P. M.

D. WALDIE, ESQ., F. C. S., Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Authors, translators, &c.,—(1) Description of an Asiatic Species of the Neuropterous Genus *Corydalis* with plate by J. Wood-Mason; (2) Notes on the History of Religion in the Himálaya of the N. W. P. of India by E. T. Atkinson, B. C. S.; (3) Notes on the History of the Himálaya of the N. W. P. of India, by the same; (4) A contribution to our knowledge of the *Embiidæ*, a Family of Orthopterous Insects, by J. Wood-Mason; (5) Sanskrit-Wörterbuch in Kürzerer Fassung, Vol. V, Part I, by Otto Boehtlingk; (6) Biggyan Shanti Kushum by Radha Prosad Roy; (7) Lanka Lilium (Sanskrit and English) by Panḍit Jogindra Natha Tarkachudamani; (8) La Nettezza della Persona e della Casa, del Dott. E. Monin, translated by Dr. Giuseppe Badaloni; (9) Sull' Attuale questione, se il Permanganato di Potassa sia l' Antidoto del Veleno dei serpenti, e nuovi studi sul dente velenifero della Vipera, by the same; (10) The Mahábhárata, Part X, by Protap Chandra Roy.

2. From the Bengal Government,—(1) Report on the Calcutta Medical Institutions for the year 1883 by A. J. Payne, M. D.; (2) Archæological Survey Report, Vols. XVII and XVIII; (3) Report on the Legal Affairs of the Bengal Government for the year 1883-84.

3. From the Home Department,—Archæological Survey Reports, Vol. XVIII.

4. From the Bombay Government,—Bombay Magnetical and Meteorological Observations, 1879-1882.

5. From the Imprimerie Nationale, Paris, Le Bhâgavata Purâna ou Histoire Poétique de Krichna, Traduit et Publié par Eugène Burnouf, Vol. IV.

6. From the Port Officer, Calcutta,—Return of Wrecks and Casualties in Indian Waters for the year 1883, by Captain A. W. Stiffe.

7. From the Physical Society of London,—Scientific Papers by James Prescott Joule, D. C. L., LL. D., F. R. S.

8. From Deutsche Morgenländischen Gesellschaft, Leipzig,—Indische Studien, Vol. XVII, Part I, by Dr. Albrecht Weber.

9. From the Chief Commissioner, Central Provinces,—(1) Report on Education in the Central Provinces for 1883; (2) Report of the Sanitary Commissioner of the Central Provinces for 1883; (3) Report on the Excise Revenue of the Central Provinces for the year 1883-84.

10. From the Government, North Western Provinces,—Report on the Progress and Condition of the Government Botanical Gardens at Saharanpur and Mussoorie for 1883-84.

11. From the Royal Society of Canada,—Proceedings and Transactions of the Royal Society of Canada for the years 1882 and 1883, Vol. I.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members:

1. William Henry Miles, Esq.
2. J. A. Anderson, Esq.
3. Kumar Indra Chunder Singh.

The following gentlemen are candidates for election at the next meeting:

E. J. Kilts, Esq., C. S., proposed by W. Irvine, Esq., seconded by Dr. A. F. R. Hoernle.

C. S. Middlemiss, Esq., B. A., Cantab.; proposed by Dr. W. King, seconded by R. D. Oldham, Esq.

The following gentleman has intimated his desire to withdraw from the Society:

R. R. Pope, Esq.

The COUNCIL reported the appointment of Babu Pratapa Chandra Ghosha to the Council.

The PHILOLOGICAL SECRETARY reported that the following coins had been acquired under the Treasure Trove Act:

7 silver coins found in the District of Etawah, N. W. P.

DR. HOERNLE exhibited a collection of so-called 'clay seals' sent for examination by Mr. Carr Stephen of Ludiána. They were stated by Mr. Stephen to have been "discovered in and near the village of Sonait, mostly in mounds cut up by rain water or excavations made by the villagers."

Dr. Hoernle made the following remarks:—"I have carefully examined them and found them much more interesting than objects of this kind, of which many have been found and shown to the Society on several previous occasions, generally prove to be. Those hitherto found have generally been Buddhistic, bearing Buddhist emblems and the well-known Buddhist creed. Most of those, and perhaps all, sent by Mr. Stephen are distinctly Brahmanic; a large number bear the dedicatory formula *Sankara-Náráyaṇábhyá[ṃ]* "to Sankara and Náráyaṇa" and many others bear the *triśul* emblem of Śiva. There are about 50 of these so-called seals in the collection. They may be divided into 27 different classes. In one class there are 14 duplicates, those dedicated to Sankar and Náráyan. In a few others there are from 2 to 4 duplicates: but in most classes there is only one specimen. In the case of some of the latter, it is not possible to determine the reading of the inscription with absolute certainty. The points of peculiar interest, however, in this collection are the following:

1. A few of the seals bear inscriptions or emblems on both sides, while those hitherto found have had them only on one side. Thus there are two specimens which bear on the obverse: *Sankara-Náráyaṇábhyá[ṃ]*, and on the reverse: *Vishṇudásasya*. The former inscription names the gods to whom the object is dedicated, the latter, the person who dedicated it. These, moreover, would seem to prove that the opinion of those who take these 'seals' to be diminutive votive tablets is correct. There is another specimen in the collection, which has on the obverse; *Sankara-Náráyaṇábhyá[ṃ]*, and on the reverse, what seems to be *mátṛiḥ* (मात्रिः), but what is perhaps to be read *mátuḥ* (मातुः); *i. e.* 'the votive tablet of the mother, dedicated to Sankar and Náráyan.' As there is only one specimen of this particular kind, it is not possible to determine with certainty the reading on the reverse. The reverse also bears Śiva's emblem of the *triśula*, an emblem which is shown also on many other specimens in the collection.

2. Several of the seals bear inscriptions which clearly prove that they were expressed, not in Sanskrit, as might be thought at first sight, but in that literary form of the ancient North Western Prákrit (or Páli) which is now commonly known as the so-called 'Gáthá dialect,' and in which, for example, also the Indo-Scythian Inscriptions found at Mathurá are composed. In such small legends, consisting of only two or three

words, it is not easy, as may be readily conceived, to distinguish between Sanskrit and the North Western Páli. But there are certain decisive characteristics, which, when found to be present, cannot possibly leave any doubt as to the language used in that particular case. Thus a very distinctive mark of Páli, as against Sanskrit, is the use of certain intercalary letters, such as *m* or *r*, inserted between two words of which one ends and the other begins with a vowel. Now among these seals there are two which bear the inscription *Srí-r-Indraguptasya*, or "(the votive tablet) of Srí Indragupta." Here the meaningless consonant *r*, inserted between *Srí* and *Indraguptasya*, unmistakeably proves the inscription to be in the North Western (literary) Páli. Another decisive mark of the latter language is the use of the genitive inflexion *sya* with substantives ending in *i* or *u*, where the Sanskrit only permits the inflexion *eḥ* and *oḥ*. Now there is another seal in the collection which bears the inscription: *Srí-Sthánusya*, "(the votive tablet) of Srí Sthánu." This, if it had been in Sanskrit, would have run thus: *Srí-Sthánoḥ*. There are a few other seals which also show legends in the N. W. Páli, but their reading is not absolutely certain.

3. There are three seals in the collection which show the clear impression of certain early Hindú coins, those ascribed to the Yaudheyas. All seals previously found, as well as all the seals in Mr. Stephen's collection (with the exception of the three) bear their inscriptions or emblems in *relievo*, showing that the latter were sunk into the die by which they were produced. But in the case of the three exceptional seals, their devices are sunk into the clay, showing clearly that they were in *relievo* on the die from which they were taken. Now coins would be exactly that sort of die. Two of the seals show a standing human figure, turned to the right, the right arm raised up before the face, the left held a-kimbo, and dressed in a long flowing robe reaching to the ancles. Under the up-raised arm is a conch shell, by the side of the other, traces of some indistinguishable object; all round the edge of the impression there runs a circle of dots. The third seal shows the standing figure of a man, turned to the front and dressed in a long coat, reaching below the knees; the right arm raised and holding a spear, the left resting on the hip. Along the edge, to the right and left of the figure, there are traces of a rude inscription in Gupta characters, *ya dha* being distinguishable by the side of the left hand of the figure; below that hand are indistinct traces of some object. In this case there is no marginal circle of dots. It would have been desirable to have some more specimens of this class for comparison, but even with the three it is impossible to mistake the class of coins from which the impressions must have been taken. These impressions

are the almost exact counterparts (allowance being, of course, made for the fact, that they are *reversed*) of the coins figured in Prinsep's *Indian Antiquities* (ed. Thomas), Plate XXI, Nos. 16 and 17, and Gen. Cunningham's *Arch. Reports*, Vol. XIV, Plate XXXI, Nos. 9, 10, 11. Indeed Prinsep's No. 16 is so strikingly like the impression, that it appears very probable that a coin of that issue actually served as the die from which these three 'seals' were made. On comparing the figured coins with my description of the seals, it will be seen that the single seal is an impression of the obverse of the coin, while the duplicate seal is impressed from the reverse. It may be also noted that the marginal circle of dots appears only on the reverse of the coin, while it is absent on the obverse, exactly as on the seals. The indistinguishable object on the obverse, below the left hand of the royal figure, is by Gen. Cunningham supposed to be the figure of a cock, and the inscription is read by him: Jaya Yaudheya gaṇasya, *i. e.*, "Hail to the Yaudheya race." (*Arch. Rep.*, Vol. XIV, p. 141.) The Yaudheya coins, from which the seals were made, are of copper and of small value; and perhaps it may be conjectured that these fictitious seals were made by poor people who in this way wished to escape payment of a, for them probably, considerable fee chargeable by the temple authorities for the making of a properly stamped votive tablet.

4. There is one very large seal in the collection which tends to confirm the surmise regarding the use of Yaudheya coins as dies of some seals. This seal bears the figure of a humped bull moving to the right, and above it, the inscription in three lines: योधेयानं जयमंत्रधराणं *yodheyánaṃ jaya-maṃtra-dharáṇaṃ* "(the votive tablet) of the Yaudheyas who know how to devise victory;" the language again being North Western Páli. The figure of the bull is exactly the same as that on some of the Yaudheya coins, so also the style of the letters of the inscription. Regarding the Yaudheyas, Gen. Cunningham says (*Arch. Rep.*, Vol. XIV, pp. 139, 140), that "they were one of the most warlike tribes in the North West and that though they now occupy both banks of the Satlej along the Bhawalpur frontier, in ancient times their territory must have extended much further to the north and east, as their coins are found all over the country as far as Delhi and Ludiána." All this fully agrees with the fact of 'seals' connected with them and their coins having been found at Sonait, near Ludiána.

With regard to the age of these seals or votive tables, they may with much probability be ascribed to the 3rd Cent. A. D. The figures on their coins, of which some of the seals bear impressions, are evidently copied from the Indo-Scythian money of Kanishka and Vasudeva, while they also show some resemblance to the earliest Gupta coinage of Kaṭot-

kacha (cf. *Ariana Antiqua*, Plate XIII, Nos. 11, 12, 20, reverses, and Plate XVIII, No. 14). Their coins, therefore, show a type intermediate between the Indo-Scythians and Guptas, and may be dated, as Gen. Cunningham says (*Arch. Rep.*, Vol. XIV, p. 141), "about the third century A. D., shortly after the decline of the Indo-Scythian power, and during the early period of the Gupta sway." This is confirmed by the character of the letters of the inscriptions which are of the earlier Gupta type. It is further confirmed by the character of the language of the inscriptions which is the same as that used in the Mathurá inscriptions belonging to the time of the later Indo-Scythian kings.

I have only to add that there are three seals which have no inscriptions at all, but only some figure or emblem. On one there is the figure of a lion on guard; on another a humped bull recumbent; on the third a large ornamental *trišul*.

One seal, I may add, shows the curious name of *Jujja*. It is inscribed on the obverse with *Srí-Jujjasya*, on the reverse with *Rudraśarma*. On both sides there is, in addition, the *trišul* emblem of Siva. *Srí-jujjasya* is another specimen of the ancient North Western Prákrit; it is the equivalent of the Sanskrit *Srí-yujyasya* or perhaps *Srí-júryasya*; *yujya* and *júrya* meaning "kinsman" and "old man" respectively; both, however, being probably in the present case proper names.

The NATURAL HISTORY SECRETARY exhibited some stone implements from New Guinea, New Britain and the Admiralty Islands.

The following papers were read:—

1. *On the recent extinction of a species of Rhinoceros in the Rajmahal Hills and* Bos Gaurus *in the Mirzapur District.—By* JOHN COCKBURN, ESQ.

(Abstract.)

In this paper, Mr. Cockburn purposes to shew that the *Rhinoceros sondaicus*, which is yet plentiful in the Sundarbans, was found in considerable numbers at the northern base of the Rajmahal Hills, so late as the year 1820, and quotes Dr. Jerdon's *Mammals* of India in support of this view. He also gives an extract from the *Bengal Hurkaru* newspaper of the 14th December 1820, containing an account of a hunting expedition from the Governor-General's camp in that locality, about 12 miles above Rajmahal, in which it is mentioned that 3 or 4 Rhinoceros were sighted, and that one of them was shot dead by Captain Brooke of the Commissariat Department.

Mr. Cockburn then alludes to the interesting discovery made by him, from information received from the villagers of the districts in the vicinity of Mirzapur, of the existence of the Bison or *Bos Gaurus* in that locality some 20 to 25 years ago,—and remarks that the Gaur is still found in Sirgoojah, two marches south of the Mirzapur district.

In a footnote, Mr. Cockburn makes some remarks on the alleged invulnerability of the hide of the Rhinoceros and appears inclined to the opinion that it is more easily penetrable than the hide of the elephant.

2. *On the durability of hæmatite drawings on Sandstone rocks.* —*By* JOHN COCKBURN, ESQ.

In the discussion that followed the reading of my paper "On the Petrographs in the caves or rock shelters of the Kaimur range in the Mirzapur district" great doubt was expressed whether drawings made merely by hæmatite on the surface of sandstone could last in such perfect preservation for so long a time as was supposed by me* (Proceedings for July and August, 1883).

In compliance with a hint from the then Natural History Secretary, I take the liberty of sending the Society a fragment of sandstone from the Lohri cave near Robertsgunge bearing the pigment in a tolerable state of preservation. It is a portion of a so-called ring marking (concentric circles with avenues). I would like the specimen to be presented to the Indian Museum when done with.

In the paper in question I was not disposed to consider the mass of the drawings as more than six or seven centuries old, and there is reason to believe that this is a very moderate antiquity for some of the drawings and scroll writing.

It will be observed that the pigment is laid on a semi-vitreous quartzite translucent at the edges. This rock is more durable than granite, and weathers extremely slowly as from its composition it is less likely to be acted on by the carbonic acid of the atmosphere or any chemical solvent action of rain water. The paintings in good preservation are as a rule those done on smoothly fractured surfaces often presenting a superficial area of several square feet, and in some few instances these surfaces appear to have been intentionally produced by fracture of strata transverse to the bedding. Pencils and lumps of the pigments used occur in the soil of the caves.

The red pigment was hæmatite occasionally of the submetallic variety, but as a rule of moderate hardness.

In many of the drawings, the rhinoceros hunt for example, no actual coating of pigment remains as is the case in the fragment sent, but the

* Mr. Cockburn was not present at the meeting.

entire drawing seems to have been stained into the rock by oxidation. All sandstones contain minute quantities of iron, and the pigment being itself an oxide of iron has readily communicated a colour of the nature of a rust stain even to the hard quartzitic rock. The chemical action of the atmosphere has therefore apparently had in the first instance a preservative effect on these drawings.

Without going to the length of a recent author who describes the Mirzapore cave drawings as executed with a "ferruginous pigment which resists indefinitely the ravages of time," (*Provincial Gazette*, Mirzapore District, p. 114,) there can be no reasonable doubt that they are at least, say for argument, over a century old; and if capable of resisting the weather for this apparently unreasonable time, why not for seven centuries. Kymore sandstone of the inferior varieties weathers with extreme rapidity. I recently had occasion to visit the grave of a friend buried in 1879 at Allahabad, and the initials on the headstone were so much eroded as to be scarcely recognisable though they had been carved to the depth of a quarter of an inch.

Judging from the polish retained by the sandstone of the Bharut railing, 2,000 years old and made of a much softer sandstone, the cave quartzite of which a specimen is sent would not loose the thousandth part of an inch in double the time.*

However any estimate of the age of the drawings based on their state of preservation *alone* would, in our ignorance of the time required for such changes, be utterly worthless.

My conclusions were drawn first from the presence of locally extinct mammalia which implied that considerable changes had taken place in the natural features of the country.

2ndly. From due appreciation of the fact that the forms of the weapons represented and the methods of using them were evidence in favour of a very rude state of culture such as must have existed a considerable time ago.

3rdly. From the existence of ancient symbols and an apparently ancient form of writing in a similarly good state of preservation.

This writing bears much resemblance to the so-called shell writing. All the specimens copied are with Dr. Rajendra Lala Mitra who has not hitherto been able to give the smallest clue to their age or character.

Mr. Beglar who has seen very similar writing at the Chetileckna rock near Ramgurh, and elsewhere, is inclined to attribute what he saw to the seventh century.

* An inscription on a slab let into the Mou Kallan bridge near Bedjeygurh which is only 120 years old and presumably of local soft sandstone is extremely weathered and eaten into.

I would draw the attention of the Society to the interest and importance which attaches to these cave paintings. They afford an unread volume on the arts, dwellings, weapons, food and religion of an unknown savage race who have in all probability been absorbed into the mass of the great Hindu people.

In some of the caves there are lengthy petroglyphic records in an unknown character, while others are in some form of Hindee.

It is quite possible that references exist in ancient Sanskrit literature on the stone-using habits of these people.

There is a very distinct historical reference to a people who lived on the western borders of the Indian Empire being in a stone age as late as 326 B. C. In McCrindle's translation of the voyage of Nearkhos, a people whom the General encountered at the mouth of the Tomeros River (identified with the modern Maklow or Hingal River about 160 miles from the mouth of the Indus on the Makran Coast) are described as savages with shaggy hair whose nails resembled the claws of wild beasts and were used for tearing open fish, &c. "*Things of a hard consistency they cut with sharp stones, for iron they had none,*" p. 184. A more succinct definition of a people in a stone age it would be difficult to write. They are described as having "*carried thick spears about six cubits long not headed with iron, but what was as good hardened at the point by fire,*" p. 183.

As the subject of these cave paintings has excited some interest among Anthropologists, and the criticism of the members in question has exercised a prejudicial effect on the general acceptance of the conclusions I had drawn, I trust the Society will give this letter early publication in the Proceedings.

Dr. W. King thought that he could give some evidence as to the durability of hæmatitic drawing on stone, for he had some years ago, when rambling among the ruined temples of the Telingana country in the Nizam's Dominions, observed that the original outlining of the ornament on some of the unfinished cornices was still extant. This was more particularly the case at the temple near Pallianpatt. The material used for the drawing appeared to have been a kind of red ochre, and the drawing looked as fresh as if it had been made a few months before, whereas there is every reason to suppose that it had been made ages ago. He was therefore inclined to go with Mr. Cockburn in his idea of the possibility of hæmatite drawings lasting for a very long period.

Dr. Hoernle observed that he thought the argument from the durability of the material afforded merely negative evidence and, taken by itself, was of very little value. A copper pice, struck yesterday, might, so far as the durability of its metal was concerned, have been

made a thousand years ago. As to Mr. Cockburn's other argument from the extinction of certain animals represented in the drawings, that too need prove no great antiquity, as in the case of the Rhinoceros, for example, it had been shown that it existed down to almost our own times. The only point that, so far as he could see, might prove decisive as to the question of the age of the drawings, was that of the alleged inscriptions. He had not had any opportunity of seeing them, and was therefore unable to express any opinion regarding them. He did not mean to assert that the drawings were modern; he merely meant to say, that at present there was not sufficient evidence before them, to express any opinion as to the age of the drawings one way or the other. At the same time he was very glad that this further information had been received from Mr. Cockburn. His first paper had not been a very lucid one, and he remembered that, at the time it was read, the members present did not seem quite to understand what Mr. Cockburn's positions and arguments were. The letter just received from him put his case very clearly, and it would now be possible to investigate the arguments put forth, and thus perhaps to settle the question of the age of the drawings.

MR. OLDHAM thanked Dr. Hoernle for his simile of the pice, for though its metal might have lasted one thousand years or more, yet the device stamped upon it would betray its age. In the drawings sent by Mr. Cockburn there were represented with remarkable fidelity animals now extinct, and these animals were hunted by men who used weapons of a type which shewed that they must have been made of wood or stone and not of metal. He could not agree with the opinion that the drawings were modern, they were not such as would be drawn by children, but bore on their face the stamp of having been made by men who were thoroughly familiar with what they drew. As far as he could understand, Mr. Cockburn's ground in his present paper was very different to that which he had originally taken up. Now he wished to attribute a hoary antiquity to the drawings: then he seemed more anxious to prove that animals now extinct in the neighbourhood had at no very distant time abounded, and had been hunted by men whose civilization and culture—if such words could be used—were very different from that shewn by the existing inhabitants. Of the two, the latter would indubitably be the more interesting result if proved.

DR. HOERNLE remarked, in reply to Mr. Oldham's observation, that, of course, a great deal depended on the device of a coin. But that was precisely the point which, with regard to the drawings in question, he considered unsettled. The drawings were admittedly of a rough kind, and he doubted, whether it was safe to determine such a minute point, as the material of which the weapons were made, from the rough indica-

tions in the drawings. He remembered, at the meeting when the drawings were shown, there was much difference of opinion as to what several of them were intended to represent.

3. *Rough Notes for the construction of a Chapter on the History of the Earth.*—*By* R. D. OLDHAM, ESQ., A. R. S. M.

(Abstract.)

The author commenced by referring to the difficulty geologists met with in correllating the strata in different parts of the earth; he pointed out that in the majority of cases the evidence of entombed fossils was all that was available, and that this was not sufficiently accurate for the purposes of the physical geologist who required some method by which the absolute contemporaneity of far separated beds could be determined. After reviewing the nature and value of the evidence yielded by marine fauna and terrestrial flora respectively, he indicated that a wide-spread glacial epoch such as has affected the earth during the post-tertiary period would give the needed proof of absolute, where the fossils indicated approximate, contemporaneity.

Passing on to the main subject of the paper, he first of all reviewed the floras of the divisions of the Gondwana series, pointing out that those of the Damudas and Rajmahals were of an extremely heterogeneous character as judged by European standards, and shewed no definite relationship to that of any one European horizon, but that the flora of the Kach beds, which is certainly newer than these, shews a very definite and well-marked relationship with that of the lower oolite.

In Australia there is a plant-bearing series marked at its base by association with a carboniferous marine fauna and at its upper limit by the presence of Jurassic shells. The Newcastle beds contain a flora allied to that of the Damudas, above them come the Hawksbury and Uranamatta beds, the latter contains a limited flora allied to the Damudas, while in the overlying beds the only relationship with any Indian flora is a single species allied to a Rajmahal form. In these Hawksbury beds of N. S. Wales and the Bauhus marsh beds of Victoria signs of glacial action have been detected, and the author dwelt on the probability of these having been deposited during the same glacial period as the Indian *Talchirs*.

In South Africa he pointed out that at the base of the Karoo beds there was a glacial boulder clay like that of the Talchirs but more strongly developed; this boulder clay is overlaid by beds which have yielded a limited flora closely allied to that of the Damudas, and these again are overlaid by other beds containing a flora related to that of the Rajmahals.

Having thus obtained a common era for the geological history of these countries, he pointed out that a flora of distinctly Mesozoic facies had lived in Australia in Palæozoic times, and that at the close of the Palæozoic or commencement of the secondary epoch it had issued from Australia and spread over what is now the old world, and in this way he explained the existence in the earlier divisions of the Gondwana series of forms of plants which in Europe are only known from beds of much later date.

Turning then to the question, whether the known facts of the history and distribution of this flora are accountable on the theory that the crust of the earth occupied the same relation towards its axis of rotation as it now does, he pointed out that if we may judge of the severity of the climate by the extent and nature of the glacial deposits of the three countries, the Southern half of Western Australia must then have been in a lower latitude than Central India, and that again than South Africa, and that these conditions are best satisfied by taking the Equator between India and Australia but some 10° nearer the latter, and thence through a point lying between the Cape of Good Hope and the South Pole in about 70° of latitude; this disposition would bring Central Africa over one of the Poles.

Reviewing the palæontological evidence he noticed the arguments for and against the probability of a land connection between India and Africa, and came to the conclusion that such connection probably took the form of a chain of large islands separated by narrow straits, and that the long continued and close relationships between the Indian and African floras pointed to the conclusion that the two regions must have been on the same side of the equator and not on opposite sides as now.

The paper concluded with a brief review of the arguments which might be urged against this hypothesis on *a priori* grounds, and pointed out that a rigid nucleus over which the crust of the earth could slide was sufficient to account for the author's requirements.

DR. W. KING could not but think that many of those present would agree in thanking Mr. Oldham for his original and, on some views perhaps startling, paper. The facts of the palæontological conditions of the question being such as had for long puzzled geologists in India, a hypothesis such as Mr. Oldham had propounded for the solution of these difficulties would be most acceptable if it could be shown to hold good. The view, however, of the movement of the earth's crust in such a way over the central mass was very difficult of conception; and an objection to it had been offered by a mathematical friend. This was that though it might be conceivable that the crust of the earth should move over the

central mass, yet this movement must also be with the rotation of the mass, or at right angles to the axis of the earth. This was an important objection which Dr. King would like to place before Mr. Oldham, though he himself was able to fancy how a 'slant' from this normal direction might be due to the variable thickness and constitution of the crust, or even to the irregular distribution of land and water.

In reply to Dr. King, the Author said, That he failed to realize the difficulty raised by Dr. King's mathematical friend and his (Dr. King's) proposed method of escaping from it. He did not suppose for a moment that the crust of the earth had so great a mobility over the nucleus as to allow it to rotate on the same axis but at a different rate under the influence of tidal friction, and he could imagine no other agency by which the state of affairs proposed by Dr. King could be brought about. Further, that in the Himalayas we had an extensive tract of country over which, exclusive of unknown ground to the north, the strata had been compressed into $\frac{1}{3}$ if not $\frac{1}{4}$ of their original lateral extension, and that so far as we know this seems to have taken place entirely within the tertiary period; but even allowing a margin for pre-tertiary contortion, the beds had certainly been compressed into $\frac{1}{2}$ of their original lateral extension during the tertiary period, or, in other words, allowing a small correction for the contraction of the earth as a whole during that period, the Northern and Southern margins had approached each other during the tertiary period. So that here we have proof of a sliding of the surface crust over the nucleus in a direction *at right angles to that declared by Dr. King to be the only one in which it could possibly take place.*

This paper will be published in the Journal, Part II.

4. *An incident in the habits of the* Semnopithecus Entellus, *the common Hanuman Monkey.—By* T. H. Hughes, Esq., A. R. S. M., F. G. S.

In Jerdon's book of mammals, reference is made to the seasonal quarrels of *Semnopithecus entellus*, and the account given in the Bengal Sporting Magazine for August, 1836. It is a story of the stronger sex trying conclusions amongst themselves for the charms of the gentler one. The males are exclusively the combatants, and the strongest usurps the sole office of perpetuating his species through the reciprocal agency of his female associates.

The correspondent of the Bengal Sporting Magazine testifies, that only one adult male is found with each pack of "Hanumans;" and states that "at a particular season of the year the great body of he-monkies, which had been leading a monastic life deep in the woods, sally forth to

the plains, and mixing with the females a desperate conflict ensues for the favours of the fair lady pugs. This continues for several days, at the end of which time one male more valorous or strong than the rest will be found in possession of the flock, his discomfited fellows remaining at a short distance from the scene of their defeat. An interesting scene now ensues, a kind of conference takes place, the female monkies delivering up their half-grown male offspring to the care of the former, who troop away to the jungle re-inforced by the hopeful juniors, who the next season return with their foster fathers to take part in the contests which ensue on their periodical migration."

I do not know whether there are any amongst us who can corroborate the statements here made. So far as my experience of the "Hanuman" goes, I would certainly say that a troop is served by more than one male.

And, if the habits of our little baboon *Innus rhesus* may be accepted as indicating the probable manners and customs of his greater cousin, the statement that there is but one stud male may be safely denied; for I have often been witness to the amorous demonstrations of several pairs in the same troop—the females progressing leisurely along or staying on their 4 legs, each with a consort on her back gripping her haunches, and fulfilling his destiny in broken periods.

Jerdon may appear to lend the weight of his acquiescence to the statements of the writer I have quoted from, by publishing his remarks; but I am loth to believe that he considered the observations chronicled as facts in natural history.

I have always met with mixed communities between the months of October and June (9 months). And if the several internecine outbursts were of annual occurrence, I think we should have had more records of their having taken place than we appear to possess.

It is quite true that the "Hanuman" sometimes engages in stirring combats, but for reasons other than the luxury of a train of wives.

In April 1882, when encamped at the village of Singpur in the Sohagpur district of the Réwa State, my attention was attracted to a restless gathering of "Hanumans" in the grove adjoining the one in which my tent was pitched; and wishing to form some idea as to its cause, I strolled to where the excitement was greatest, and found two opposing troops engaged in demonstrations of an unfriendly character.

Two males of one troop—fair-sized brutes, and one of another—a splendid looking fellow of stalwart proportions—were walking round and displaying their teeth. The solitary gladiator headed a much smaller following than that captained by the other two, and, strange to say, instead of the whole number of monkeys joining in a general melee,

the fortune of the question that had to be decided appeared to have been intrusted to the representative champions.

It was some time—at least a quarter of an hour—before actual hostilities took place, when, having got within striking distance, the two monkeys made a rush at their adversary. I saw their arms and teeth going viciously, and then the throat of one of the aggressors was ripped right open and he lay dying. He had done some damage however before going under, having wounded his opponent in the shoulder, and matters then seemed pretty evenly balanced between the remaining strugglers.

I confess that my sympathies were with the one champion who had gallantly withstood the charge of his enemies; and I fancy the tide of victory would have been in his favour had the odds against him not been re-inforced by the advance of two females. I felt that the fight was not a fair one, but was deterred from interfering by a wish to see what the end of the affray would be—and the end, so far as the solitary "Hanuman" was concerned, soon came.

Each female flung herself upon him, and, though he fought his enemies gallantly, one of the females succeeded in seizing him in the most sacred portion of his person, and depriving him of his most essential appendages. This stayed all power of defence, and the poor fellow hurried to the shelter of a tree where leaning against the trunk he moaned occasionally, hung his head, and gave every sign that his course was nearly run. Possibly he would have been killed outright had I not been present, but when I saw him so helpless, I interfered on the chance of being able to save him. He was however hopelessly mutilated, and before the morning he was dead.

Not one of his own troop came to his aid: I presume they were either awed by the array of numbers on the other side, or they had full confidence in their leader. Had they assisted, they might in the end have been better off, for the result of the defeat of their champion was that the whole of the aggressive troop entered upon a guerilla warfare, and isolating several of the members of the weaker troop kept them prisoners under surveillance. Whenever the latter tried to break away, their guards stopped them, and then effectually watched them by occupying every piece of vantage-ground.

One female with a young one was most viciously chased, and when in her efforts to escape her enemies she climbed to one of the highest limbs of a big tree, those in pursuit actually shook the branch on which she was, and jerked her to the ground. The fall was a nasty one, and she was so badly hurt that in the course of the night she went to swell the list of fatally wounded.

The defeated troop were thoroughly cowed, for one of the number actually allowed me to approach it quite closely without moving.

I certainly do not ascribe the onslaught I saw to sexual excitement; it was plainly an incursion of a stronger troop into the domain of a weaker one; and under mistaken counsel the weaker hesitated too long in yielding their feeding ground.

The mangoes were formed sufficiently to be objects of cupidity, and in the absence of human consumers they were worthy of contention to marauding "Hanumans."

On the morning following the fight, I examined the teeth of the big monkey who had been emasculated, and noticed what formidable weapons his canines were. I no longer wonder at the celerity with which the combatants tore and mutilated each other.

In concluding this trespass on your time, I wish to explain that my remarks have been as brief as possible, from a feeling that their proper place would have been in the sporting pages of the "Asian" newspaper.

If my observations are reliable I think we may believe:

(*a*) That the herding of males for many months in the year uncheered by the presence of female companions is improbable:

(*b*) That the appropriation of an entire herd of females by one male is extremely doubtful:

(*c*) That seasonal frays dependent on sexual exuberance are questionable:

(*d*) That there *are* ejection fights, in which death or damage is the war cry, irrespective of sex.

LIBRARY.

The following additions have been made to the Library since the meeting held in August last.

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,

presented by the respective Societies and Editors.

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Berlin. K. preussische Akademie der Wissenschaften,—Abhandlungen, 1883.

———. ————. Sitzungsberichte, Nos. 1—17, 1884.

Bombay. Indian Antiquary,—Vol. XIII, No. 159, August, 1884.

Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 14, 1884.

Boston. American Oriental Society,—Proceedings, May, 1884.

Brussels. Musée Royale d'Histoire Naturelle de Belgique,—Bulletin, Vols. II, Nos. 1—4; III, No. 1.

Calcutta. Geological Survey of India,—Records, Vol. XVII, Part 3.

———. Original Meteorological Observations,—March, 1884.

Cassel. Verein für Naturkunde,—Bericht, No. 31.

Copenhagen. K. Nordiske Oldskrift-Selskab,—Aarboger, Part 2, 1884.

The Hague. Koninklijk Taal, Land, en Volkenkunde van Nederlandsch-Indië,—Bijdragen, Vol. VIII, No. 2.

Königsberg. Physikalisch-Ökonomischen Gesellschaft,—Schriften, Vol. XXIV, Nos. 1, 2.

Lahore. Anjuman-i-Punjab,—Journal (English Section), Vol. IV, Nos. 32—36.

Leipzig. Deutsche Morgenländische Gesellschaft,—Zeitschrift, Vol. XXXVIII, No. 1.

London. Academy,—Nos. 638—640, 1884.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XIII, Nos. 3, 4, February and May, 1884.

———. Athenæum,—Nos. 2961—2963, 1884.

———. Institution of Civil Engineers,—Minutes of Proceedings, Vol. LXXVI.

———. Institution of Mechanical Engineers,—Proceedings, No. 2, May, 1884.

———. Nature,—Vol. XXX, Nos. 769—771.

———. Royal Astronomical Society,—Monthly Notices, Vol. XLIV, No. 7, May, 1884.

———. Royal Geographical Society,—Proceedings, Vol. VI, Nos. 6, 7, June and July, 1884.

———. Royal Microscopical Society,—Journal, Vol. IV, (Series II), Part 3, June, 1884.

———. Royal Society,—Proceedings, Vol. XXXVI, No. 230.

———. Zoological Society of London,—Proceedings, Part 1, 1884.

Moscow. Société Impériale des Naturalistes,—Bulletin, Vol. LVIII, No. 3.

Munich. Repertorium der Physik,—Vol. XX, No. 6.

Paris. Société d'Anthropologie,—Bulletin, Vol. VII, (Series III), No. 2.

———. Société de Géographie,—Comptes Rendus des Séances, No. 15, 1884.

Schaffhausen. La Société Entomologique Suisse,—Bulletin, Vol. VI, No. 10.

St. Petersburg. L' Académie Impériale des Sciences,—Mémoires, Vol. XXXI, Nos. 10—14.

———. Comité Géologique,—Mémoires, Vol. I, No. 2.

St. Petersburg. Comité Géologique. Proceedings, Vol. III, Nos. 1—5.
Turin. R. Accademia della Scienze,—Atti, Vol. XIX, No. 5.
Vienna. Anthropologische Gesellschaft,—Mittheilungen, Vols. XIII, Nos. 3, 4; XIV, No. 1.
———. K. K. Central-Anstalt für Meteorologie und Erdmagnetismus,—Jahrbücher, Vols. XVIII, XIX.
———. K. K. Zoologisch-botanische Gesellschaft,—Brasilische Sängethiere, Vol. XXXIII.
———. ———. Verhandlungen, Vol. XXXIII.
Washington. Annual Report of the Chief Signal Officer,—Parts I, II, 1882.

Books and Pamphlets,

presented by the Authors, Translators, &c.

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———. Notes on the History of Religion in the Himálaya of the N. W. P. of India. 8vo. Allahabad, 1884.
BOEHTLINGK, OTTO. Sanskrit-Wörterbuch in Kurzerer Fassung. Vol. V, Part I. Fol. St. Petersburg, 1884.
La Nettezza della Persona e della Casa, del Dott. E. Monin, translated by Dr. Giuseppe Badaloni. 8vo. Piacenza, 1884.
ROY, PROTAP CHANDRA. The Mahábhárata, translated into English Prose. Part X. 8vo. Calcutta, 1884.
ROY, RADHA PROSAD. Biggyan Shanti Kushum (Bengali). 8vo. Calcutta, 1884.
Sull' Attuale questione, se il Permanganato di Potassa sia l' Antidoto del Veleno dei serpenti, e nuovi studi sul dente velenifero della Vipera. 4to. Naples, 1884.
TARKACHUDAMONI, PUNDIT JOGINDRA NATH. Lanka Lilium (Sanskrit and English.) 8vo. Calcutta, 1884.
WOOD-MASON, J. A Contribution to our Knowledge of the *Embiidæ*, a family of Orthopterous Insects. 8vo. London, 1883.
———. Description of an Asiatic species of the Neuropterous genus *Corydalis*, with plate. 8vo. London, 1884.

Miscellaneous Presentations.

Archæological Survey Reports, Vols. XVII, XVIII. 8vo. Calcutta, 1884.
Report on the Calcutta Medical Institutions for the year 1883. Fcp. Calcutta, 1884.

Report on the Legal Affairs of the Bengal Government for the year 1883-84. Fcp. Calcutta, 1884.

BENGAL GOVERNMENT.

Bombay Magnetical and Meteorological Observations, 1879-1882. Fol. Bombay, 1883.

BOMBAY GOVERNMENT.

Report on Education in the Central Provinces for 1883. Fcp. Nagpur, 1884.

Report on the Excise Revenue of the Central Provinces for the year 1883-84. Fcp. Nagpur, 1884.

Report of the Sanitary Commissioner of the Central Provinces for 1883. Fcp. Nagpur, 1884.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Indische Studien by Dr. A. Weber, Vol. XVII, Part I. 8vo. Leipzig, 1884.

DEUT. MORGENLANDISCHE GESELLSCHAFT.

Report on the Progress and Condition of the Government Botanical Gardens at Saharanpur and Mussoorie for 1883-84. Fcp. Allahabad, 1884.

GOVT., NORTH WEST PROVINCES.

Archæological Survey Reports, Vol. XVIII. 8vo. Calcutta, 1884.

HOME DEPARTMENT.

Le Bhâgavata Purâna, ou Histoire Poetique de Krichna, traduit et publié par Eugène Burnouf, Vol. IV. Fol. Paris, 1884.

IMPRIMERIE NATIONALE, PARIS.

International Meteorological Observations, July to October, 1882; May, 1883. 4to. Washington, 1883-84.

Monthly Weather Review, October and November, 1883; May, 1884. 4to. Washington, 1883-84.

METEOR. REPORTER TO THE GOVT. OF INDIA.

Scientific Papers by James Prescott Joule, D. C. L., LL. D., F. R. S. 8vo. London, 1884.

PHYSICAL SOCIETY OF LONDON.

Return of Wrecks and Casualties in Indian Waters by Capt. A. W. Stiffe for the year 1883. Fcp. Calcutta, 1884.

PORT OFFICER, CALCUTTA.

Proceedings and Transactions of the Royal Society of Canada for the years 1882 and 1883, Vol. I. 4to. Montreal, 1884.

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Cassel. Botanisches Centralblatt,—Vols. XVIII, Nos. 8—13; XIX, Nos. 1, 2.
Edinburgh. The Edinburgh Review,—Vol. CLX, No. 327, July, 1884.
Geneva. Archives des Sciences Physiques et Naturelles,—Vol. XII, No. 7.
Göttingen. Gelehrte Anzeigen,—Nos. 14, 15, 1884.
Leipzig. Annalen der Physik und Chemie,—Vol. XXII, No. 4.
———. ———. Beiblätter,—Vol. VIII, No. 7.
———. Hesperos,—Vol. IV, Nos. 74—76.
———. Literarisches Centralblatt,—Nos. 23—29, 1884.
———. Literatur-Blatt für Orientalische Philologie,—Vol. I, Nos. 2—6.
London. Annals and Magazine of Natural History,—Vol. XIV, No. 79, July, 1884.
———. Chemical News,—Vol. L, Nos. 1287—1289.
———. Entomologist,—Vol. XVII, No. 254, July, 1884.
———. Entomologist's Monthly Magazine,—Vol. XXI, No. 242, July, 1884.
———. The Ibis,—Vol. II (Series V), No. 7, July, 1884.
———. Journal of Botany,—Vol. XXII, Nos. 258, 259, June and July, 1884.
———. Journal of Science,—Vol. VI (Series III), No. 127, July, 1884.
———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XVIII, No. 110, July, 1884.
———. Messenger of Mathematics,—Vol. XIV, No. 1, May, 1884.
———. Mind,—No. 35, July, 1884.
———. Nineteenth Century,—Vol. XVI, No. 89, July, 1884.
———. Numismatic Chronicle,—Part I, 1884.
———. Quarterly Journal of Pure and Applied Mathematics,—Vols. XIX, Nos. 73—76; XX, No. 77; October, 1882 to February, 1884.
———. Quarterly Review,—Vol. CLVIII, No. 315, July 1884.
———. Society of Arts,—Journal, Vol. XXXII, Nos. 1653—1655.
———. Westminster Review,—Vol. LXV, No. 131, July, 1884.
New Haven. American Journal of Science,—Vols. XXVII, No. 162; XXVIII, No. 163; June and July, 1884.

Paris. Revue Critique,—Vols. XVII, Nos. 25, 26; XVIII, No. 27.
——. Revue des deux Mondes,—Vols. LXIII, Nos. 3, 4; LXIV, No. 1.
——. Revue de Linguistique,—Vol. XVII, No. 1.
Philadelphia. Tryon's Manual of Conchology,—Vol. VI, No. 3.

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Encyclopedia Britannica. Vol. XVII (IXth Edition.) 4to. Edinburgh, 1884.

Godwin-Austen, Lt.-Col. H. H., F. R. S. Land and Fresh Water Mollusca of India. Part V (Plates,) June 1884. 4to. London, 1884.

Temple, Capt. R. C. The Legends of the Punjab. No. 13, August, 1884. 8vo. Bombay, 1884.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR NOVEMBER, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 5th November, 1884, at 9 P. M.

H. F. BLANFORD, ESQ., F. R. S., President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Home Department,—Commentary on the Quran, Vols. I, II, by Rev. E. M. Wherry; (2) The Modern Languages of Africa, Vols. I, II, by Robert Needham Cust; (3) Religion in China, by Joseph Edkins, D. D.; (4) Outlines of the History of Religion, by G. P. Tiele, translated by J. E. Carpenter; (5) First Report of the Curator of Ancient Monuments in India for the year 1881-82; (6) Selections from the Official Writings of the Hon'ble Mountstuart Elphinstone, by G. W. Forrest.

2. From the Authors, Publishers, &c.,—The Adventures of Raja Rasálu, by Rev. C. Swynnerton; (2) Recherches Théoriques et Expérimentales sur les Oscillations de l' Eau et les Machines Hydrauliques à Colonnes Liquides Oscillantes, by Marquis Anatole de Caligny; (3) Seven Grammars of the Dialects and Sub-Dialects of the Bihari Language, Parts I—IV, by G. A. Grierson; (4) Report on the Tea-Mite and Tea-Bug of Assam, by J. Wood-Mason; (5) Asiatic Researches, Popular Edition, Vol. I, No. 3, published by Brojendrolal Dass; (6) the Mahábhárata, Part XI, translated by P. C. Roy; (7) Address to the Geological Section of the British Association, by W. T. Blanford, F. R. S., Sec. G. S., F. R. G. S.

3. From the Smithsonian Institution,—Censo General de la Provincia de Buenos Aires.

4. From the Académie des Sciences, Belles-Lettres et Arts de Bordeaux,—Table Historique et Méthodique des Travaux et Publications de l'Académie de Bordeaux depuis 1712 jusqu'en 1875.

5. From the Institution Ethnographique,—Annuaire de l'Athénée Oriental pour 1880; (2) Annuaire de la Société d' Ethnographie pour 1881 et 1882; (3) L'Ame Humaine, au point de vue de la science ethnographique, par C. Schœbel; (4) Instructions pour les Délégations de l'Institution Ethnographique; (5) Rapport Annuel sur les Recompenses et Encouragements décernés par l' Institution Ethnographique en 1883; (6) Liste des Membres de la Société d' Ethnographie et Statuts de la Société; (7) Compte-rendu des séances de la Société Américaine de France, Tome IX, 1879, Partie I; (8) Archives de la Société Américaine de France, Nouvelle Série, Tome II, Partie I.

7. From the University Library, Cambridge,—Thirteenth Annual Report of the University Library.

8. From the Indian Museum, Calcutta,—Report of the Trustees of the Indian Museum for the year 1883-84 (6 copies).

9. From the Government of French Cochin China,—Excursions et Reconnaissances, Nos. 16—18, (being a collection of official papers, &c., on French Cochin China.)

10. From the Madras Government,—Report on the working of the Government Central Museum, Madras, for 1883-84.

11. From the Delegates, Clarendon Press Warehouse, Oxford,—Anecdota Oxoniensia, Vol. I, Part III, by Prof Max Müller and Bunyiu Nanjio.

12. From the Government, N. W. Provinces,—Report of the Progress and Condition of the Government Botanical Gardens at Saharanpore and Mussoorie for 1883-84.

13. From the St. Xavier's College Observatory,—St. Xavier's College Observatory, Observations for January to June, 1884.

14. From Kon. Inst. voor de Taal-, Land- en Volkenkunde van Nederl. Indië,—(1) Geschiedenis van Tanette. Boeginesche Tekst met Aanteekeningen, by G. K. Niemann; (2) Eenige Proeven van Boegineesche en Makassaarsche Poëzie, by Dr. B. F. Matthes.

15. From Naturhistorisches Museum zu Hamburg,—Naturhistorisches Museum zu Hamburg, by Dr. Pagenstecher; (2) Ueber einige Afrikanische Reptilien Amphibien und Fische des Naturhistorisches Museums, by Dr. J. G. Fischer.

16. From K. Akad. der Wissenschaften, München,—Ueber Herkunft und Sprache der Transgangetischen Völker, by Ernst Kuhn; (2) Gedächtnissrede auf Theodor L. W. von Bischoff, by Carl Kupffer; (3) Franz von Kobell. Eine Denkschrift, by K. Haushofer; (4) Monumenta Tridentina. Beiträge zur Geschichte des Concils von Trient, Heft I, by August von Druffel.

17. From the Government of India, Rev. and Agric. Depart-

ment,—Economic Products of India, exhibited in the Economic Court, Calcutta International Exhibition, 1883-84, Parts I—VII (in 4 vols.), by Dr. Geo. Watt.

18. From the Surveyor-General of India,—4 Maps illustrative of A— K—'s Explorations in Great Thibet and Mongolia.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members:—

1. E. J. Kitts, Esq., C. S.
2. C. E. Middlemiss, Esq.

The following gentlemen are candidates for election at the next meeting:—

George M. Giles, Esq., M. B., Surgeon Naturalist, S. S. "Investigator," proposed by J. Wood-Mason, Esq., seconded by F. E. Pargiter, Esq., C. S.

R. B. McCabe, Esq., C. S., Deputy Commissioner, Naga Hills, proposed by Major C. R. Macgregor, seconded by C. S. Bayley, Esq.

Prince Mirza Saraiya Jah, Bahadur, proposed by Nawab Abdul Latif Khan, Bahadur, C. I. E., seconded by C. H. Tawney, Esq., M. A.

The following gentleman has intimated his desire to withdraw from the Society:—

Monsieur E. van Eetvelde.

The COUNCIL reported that the Hon'ble H. Beverley had been appointed Member of Council.

The COUNCIL reported that the publication of the following works in the Bibliotheca Indica had been sanctioned:—

Translation of the Tarikh-i-Yamini, by L. W. King, B. A., C. S.

Continuation of the translation of the Susruta (left incomplete by the death of Dr. U. C. Dutt), by Dr. B. Gupta.

The SECRETARY read a letter received from Mr. F. Moore thanking the Society for having elected him an Associate Member.

Mr. R. D. OLDHAM exhibited some fossils from the Jumna alluvium collected by Mr. J. Cockburn, and said:

I have to bring before your notice this evening what I may safely describe as one of the most important discoveries communicated to the Society during recent years; it is a series of fossil bones found in the alluvium of the Jumna by Mr. J. Cookburn at Chilla on the banks of the Jumna south of Futtehpore. The earliest reference to fossils in the Jumna alluvium that I can find is at p. 23 of the first volume of "Glean-

ings in Science," where it is recorded that, at the meeting of the Asiatic Society held on the 1st August, 1828, a letter was read from Dr. Leslie to Dr. Duncan mentioning the occurrence of fossil bones of an elephant at Calpee (Kalpi) on the Jumna. The extract can be seen printed in full as a footnote on p. 623 of Vol. II of the Society's Journal.

The next reference is the paper to which the extract referred to is appended as a footnote. It is entitled: "Notes on the Kankar Formation and Fossil Bones collected on the Jumna, by Capt. E. Smith, Bengal Engineers." This paper deals mainly with the kankar, but a fact is recorded with reference to the occurrence of the fossil bones which explains the strongly contrasted mineralization of different specimens among Mr. Cockburn's specimens. Capt. Smith describes the fossils as occurring partly in gravel cemented by kankar, which was evidently of recent origin as it contained fragments of brick, &c., but others were obtained from the alluvial clays, and these he remarks were much more perfect in their state of preservation than the first mentioned, which he hardly seems inclined to regard as true fossils. The paper is illustrated by a plate of rough sketches of some of the fossils, which in the explanation are identified as elephant, camel (?), horse, buffalo and human (?).

In Vol. IV of the Journal there are no less than four papers bearing on this point. Two of these are by one Serjeant Edmund Dean, who seems to have been a shrewd observer; and, where he merely describes facts observed, his descriptions are probably trustworthy; nor are his deductions, considering his necessarily limited education, so much more wrong than those current in his days, as one might not unnaturally expect. His paper is, however, for our present purpose chiefly valuable as clearly describing the process of formation of the kankar banks from which the fossils were mainly obtained; they are, according to his description, composed of kankar and other hard material washed out of the alluvium by the erosion of the stream and accumulated where the current is checked, thus consisting of large accumulations of hard material: and in these banks the scattered fossils of the alluvium are concentrated. Serjeant Dean was of opinion that the bones found were all of recent origin; and, though this may have been correct as regards many of them, it certainly does not apply to all.

Besides these two papers, Vol. IV contains a list of specimens collected by Capt. Vicar in the Betwa river, and a plate of rough sketches of fossils found in the Jumna alluvium.

Among these is one of some *Hippopotamus* teeth which very closely resemble those of the Sivalik *H. palæindicus*, and, as this is certainly an extinct animal in India, we may regard it as a true fossil of the alluvium, and by implication extend the conclusion to its companions. One of

Mr. Cockburn's specimen presents a similar point of interest: it is from a kankar matrix and looks almost recent, but on comparison with our collections in the Indian Museum it proves to be the quadrate bone of some large ruminant, and to resemble that of the giraffe very closely; as might be expected it belongs to a species different from the existing African giraffe, and differs also from the same bone in a very fine tarsus of the *Camelopardus sivalensis* preserved in the Indian Museum in being slightly shallower in proportion to its breadth. It, however, almost certainly belongs to a giraffe, a genus which I need not remind you is now extinct in India.

Mr. Cockburn has written to me that he will endeavour to procure a considerable series of these fossils during the coming cold weather, and I have no doubt that when this series is examined, it will prove the correctness of the statement I have made, that this is one of the most important discoveries laid before the Society for some years past.

The PRESIDENT said that the discovery of vertebrate fossils in the Jumna alluvium ranked among the earliest palæontological discoveries in India, and he believed nothing had been added to the original find, although dated so far back in the history of Indian science. The present additions were therefore of much interest, and he would hope they might be taken as an earnest of more to follow.

The following papers were read—

1. *On the* Peepsa, *a small Dipterous Insect, injurious to man in Assam.—By* PROF. DR. BRAUER. *Communicated by* J. WOOD-MASON, *Natural History Secretary, A. S. B.*

(Translated from the German.)

These animals belong to the gnats, and more particularly to the genus *Simulium, Latreille.* The species has not yet been described, but approaches very nearly *Simulium ornatum*, which occurs in Austria. The *Simulia* are feared everywhere on account of their piercing proboscis, and are a real pest in some parts of Hungary and Servia. They are called there "Columbazer Mücke," and make their appearance in extraordinary numbers, so that people can venture into the open only at night; numbers of cattle are killed by the flies, which get into the nose and windpipe of the cattle, and thus suffocate them. Fortunately the flies appear there only for a fortnight.

The *Simulia* develope in running water. The eggs are deposited on leaves on the surface; the larvæ are suspended from submerged plants, so also are the nymphæ, for which they spin a cone-shaped cocoon.

All plans to diminish the number of these flies have been hitherto without success, as they cannot be exterminated in the water or only to a

limited degree. Smoke is a protection against them, and it is produced by putting live coals into heaps of dung, leaves, hay, and the like. Another protection against their bites is an embrocation of tobacco decoction or of kerosine oil. For cattle, an ointment is made in the following way: 2 lbs. of tobacco leaves are boiled in 20 lbs. of water, the decoction is evaporated to the consistency of honey, then to this extract is added 1 lb. of lard and ¼ oz. of kerosine oil. The resulting ointment is rubbed into the skin of the cattle and has the effect of keeping the flies off. It has to be applied especially near the openings of the body, on the belly and genitals, and the application must be repeated every third day.

Against the bites of the flies and their consequences on the recommendation of Schönbauer people apply fomentations of lukewarm milk, warm poultices of linseed and water, fresh linseed oil, or fresh butter, which diminish the smarting pains very much and prevent swelling, if they are used early enough. Finally, lukewarm softening baths are recommended; also internally cooling drinks, and in convulsions opiates.

Besides this, washing with diluted Goulard-water, vinegar and ammonia is recommended. Aqua plumbic. grm. 400, externally.

Or internally,

Liquor ammon. acet. grm. 20.
Infus. florum Sambuci grm. 140.
Extract. Sambuc. grm. 8.
Spirit. Aether. acet. grm. 4.
A table spoonful every hour.

Or externally,

Acidi carbolici grm. 8.
Olei olivarum grm. 80.
On lint
Moistening the wounds with alcohol, water, and vinegar.

The most dangerous species is *S. columbazense*, Schönb. Schiner.

2. *Description of a new species of the Dipterous Genus* Simulium *from Assam.—By* Dr. Edward Becher. *Communicated by* J. Wood-Mason.

(Abstract.)

This paper consists of a detailed description of the insect, which Dr. Becher has named *Simulium Indicum*, and is illustrated by a plate. Dr. Becher remarks that this is the first known Asiatic species. Only a few of the non-European species have hitherto been described, whilst the number of the European species is not inconsiderable.

Mr. R. D. OLDHAM asked whether the "Peepsa" was the same as the "Poto" of the North Western Frontier. He explained the effects of the bite of the latter, and inferred from the drawing exhibited that the two insects were the same.

The NATURAL HISTORY SECRETARY replied that the genus *Simulium* was a Palæarctic form, and that the same or closely allied species in all probability extended all along the Southern slopes of the Himalayas, when the Palæarctic form was interdigitated with the Oriental.

3. *Notes on the monsoon waves on the coast of Alibagh, south of Bombay Harbour, taken during the Monsoon of* 1884.—*By* W. F. SINCLAIR, *1st Assistant Collector, Kolaba. Communicated by* H. F. BLANFORD, F. R. S.

The Alibagh taluka lies immediately south of Bombay Harbour; and its coast for about twenty miles receives the full force of the S. W. Monsoon. The bottom is sand and mud, with frequent reefs, and sloping gradually to the west. The worst sea is between three and four fathoms of water; inside that limit the surf seems to lose its power as it nears the shore; outside it is the deep water swell. There are at Alibagh two life-boats, which are constantly out in all weathers. The first the "*Bhowani*" carries her mainpeak 24 feet above the load water line, and the other, the "*Allen Shuttleworth*," 33 feet above. The *Bhowani's* sail is frequently becalmed and flaps between the seas; the *Shuttleworth's* has only been observed to do so once this year, though she was out in worse weather than the *Bhowani*. The uppermost 3 or 4 feet of the sail, though holding wind, will not prevent the rest from flapping, as is shown by the sail flapping when the flag flown at the peak (of three feet hoist) flies free. The flag itself is sometimes becalmed, but not so often as the sail. The conclusion is that waves of about 20 feet in total height, that is, 10 feet above the general level of the water, are common; and waves of about 24 not uncommon; but waves of 30 feet very rare. These observations, however, apply only to the dangerous belt between and about 3 and 4 fathoms of water (outside and inside of which even the *Bhowani's* sail seldom flaps) and on it only to the big waves commonly called "ninth waves." It has not been found in the course of these observations that the ninth waves are the worst; nor indeed that any particular number or interval of time can be fixed; though it might naturally be expected that some regularity would be found when the wind is pretty steady. Sometimes three waves together seem to be bigger than the others.

A second means of guessing at the height of the waves was employed. At a little over three nautical miles from a fixed point on

shore stands the Chaul Kadee beacon, a masonry tower sixty feet high, on a rock about 6 feet above low water of ordinary spring tides, which rise on it about 12 feet, rather less than more. The observer's glass being about 9 feet above high water mark, the tower was carefully watched at high water almost every day and on *every* day when the sea was unusually high. The sea is commonly said to "break over the tower;" the spray undoubtedly does often fly over the top of it, and the foam rears up to about two-thirds of the height of it, perhaps more; but the solid body of the wave, the "*green sea*," never *appears* to reach up more than about one-third of it, and very rarely so high. It should be stated that there is 14 feet of water at low water, ordinary spring tides, within a few yards to seaward of the base of the tower, so that at high water it is on the dangerous belt between three and four fathoms. Observation of the tower failed to show any clearly marked succession of waves by number, or any constant interval of time between the biggest waves; nor was the association of three big waves so much noticed on it as in the boats. But sometimes a wave, itself above the average, would either follow or precede one which seemed to be not only much higher than it, but much longer in getting past the tower; and it is possible that this latter was really made up of two, heaped together on the reef.

The PRESIDENT said that in the first communication he had received from Mr. Sinclair, whom he had known for some year or two as an acute observer of physical phenomena that came in his way, he had merely given the results of his observations on the waves. He had therefore asked him to draw up the present short note describing his method of measuring the height of the waves. It was a general belief that in the waves on coasts every third, or seventh wave, or that at some other numerical interval, was bigger than the others, implying of course a compound system of waves. Such phenomena, if real, were probably only of local significance and might depend on the form of the sea bottom, and the advance of two or more wave series of different periodicity from different directions.

4. *Variations of Rainfall in Northern India during the Sunspot Period.—By* A. N. PEARSON, *Officiating Meteorological Reporter for Western India. Communicated by* H. F. BLANFORD, F. R. S.

(Abstract.)

The author refers to Mr. S. A. Hill's paper in the Indian Meteorological Memoirs, showing the opposition that exists between the variations of the winter and of the summer rainfall in Northern India

during the sunspot period. In this paper Mr. Hill puts the actual rainfall totals through a simple process of smoothing, such as is frequently adopted in dealing with statistical tables. Mr. Pearson takes the unsmoothed totals, and finds that, besides the single oscillation shown in the winter and summer curve during the eleven years of the sunspot period, the winter and summer rainfall show several variations of minor periods, such as might naturally be supposed to be accidental. Mr. Pearson confines his attention to these minor oscillations, and finds that in those years which are years of maximum sunspot, the short period oscillations in the winter and summer rainfall are of the same character; that is to say, that when there is more winter rain, there is more summer rain, and when there is less of the one, there is less of the other also; but he finds that in those years, which are years of minimum sunspot, the short period oscillations in the winter rainfall are of opposite character to those in the summer rainfall; that is, when there is most rain in the winter, there is less during the summer and *vice versâ*. Again, in those years which immediately precede the years of maximum and minimum sunspot the order above pointed out obtains only in a slight degree: in other words, these are years of transition. Mr. Pearson adduces other arguments to show that the above can hardly be the result of accident, and then states that, if this can be established as a general rule, it will be an important one, for it will indicate that, whatever be the cause which produces the general opposition in character between the eleven yearly variations of the winter and of the summer rainfalls, that cause operates chiefly during the years of minimum sunspot; and during three years of maximum sunspot it operates only in a very minor degree, and in two of those years (namely, the first and the second) it probably does not operate at all. By thus limiting the period during which the cause operates, a valuable point is gained, and a clue to a knowledge of the cause possibly afforded. Mr. Pearson also finds that these rules not only obtain qualitatively, but also quantitatively; that is to say, that the oscillation which takes place is not only the same in phase, but is nearly the same in amplitude.

The PRESIDENT said*:—The relations pointed out by Mr. Pearson between the variations of the summer and winter rainfall, if, as he supposes, they are really the outcome of a general law, are certainly curious. But having regard to the amount of the data discussed, and the great local variability of rainfall, it is difficult to resist the impression that they may after all be in some measure fortuitous. To decide this question we should

* In these remarks some additions have been made to the data actually laid before the meeting.

have at our command the registers of at least three or four sun-spot cycles and of a much larger number of stations. And I think it would be premature therefore to discuss Mr. Pearson's conclusions from any other point of view than that of the validity of the grounds on which they rest. Mr. Pearson's data are taken from a paper by Mr. Hill, and comprise the registers of 20 stations scattered over Northern India, and extending altogether over four sun-spot cycles. But the first of these is represented by 1 station only, the second by 2, the third by 5, and the fourth by 17. In computing the mean variation, the figures of each cycle are weighted according to the number of stations representing it, and hence it follows that the resulting variation is mainly that of the last cycle.

"How far the rainfall variation of Northern India may be considered as fairly represented by 20 stations, may be judged, in some measure, from the following comparison of the variation of five years in portions only of Northern India, as computed from a smaller and larger number of stations in each case; (in all but one, from more than 20 stations).

Province.	Number of Stations.	Nominal Average. Ins.	Per Centage variation. 1877	1878	1879	1880	1881
Punjab	29	21·4	+ 14	+ 18	— 21	— 22	+ 1
	112	20·1	+ 11	+ 11	— 24	— 16	+ 5
N. W. Provinces and Oudh	45	35·6	— 43	— 5	+ 34	— 26	— 3
	230	34·6	— 44	— 8	+ 37	— 28	— 1
Behar	13	43·4	— 22	— 12	+ 22	+ 8	+ 6
	27	43·4	— 20	— 10	+ 21	+ 6	+ 8
Lower Bengal	29	66·7	+ 7	+ 7	— 6	+ 11	+ 4
	83	69·0	+ 5	+ 7	— 8	+ 8	+ 2

"Now it appears that, in 20 years, the mean annual deviation of the rainfall of any one year from the general average, in each of these four provinces, is as follows:

Punjab	± 13 per cent.
N. W. Provinces and Oudh	± 23 „ „
Behar	± 18 „ „
Lower Bengal	± 10 „ „

and as far as any conclusion may be drawn from the comparison just given, it would seem that, assuming the figures obtained from the more numerous stations as true values, the mean error and maximum error of the result for any one year, as derived from the smaller number of stations, are in

		mean	*maximum*
The Punjab	...	5 per cent.	7 per cent.
N. W. Provinces	...	2 „ „	3 „ „
Behar	...	2 „ „	2 „ „
Lower Bengal	...	2 „ „	3 „ „

"These data suffice only to give some general idea of the amount of error inherent in the figures dealt with by Mr. Pearson, but I must confess that in my mind they engender some misgiving.

"There is another point of view, from which the results may perhaps be called in question, *viz.*, the method of smoothing; by which the cyclical variation is determined, the values of which serve as Mr. Pearson's points of departure, for the determination of those residual values, which form the subject matter of his discussion. The method of smoothing adopted is to add to the differential figures of each year, half the sum of those for the preceding and succeeding years, and to divide the sum by two. This method is in accordance with the formula

$$b' = \frac{a + (n-1)\,b + \dfrac{(n-1)\,(n-2)}{1.2}\,c}{1 + (n-1) + \dfrac{(n-1)\,(n-2)}{1.2}}$$

where a, b, and c are the unsmoothed values for three consecutive years, b' the smoothed value for the middle year of the series, and n (here = 3) the number of years in the series. The selection of a series of 3 years is of course arbitrary; and I have therefore computed a smoothed series in which $n = 11$ (the full series of years), the numerical values of the serial coefficients of the numerator being

1, 10, 45, 120, 210, 252, 210, 120, 45, 10, 1,

and the divisor their sum. The residues which result when the smoothed values, thus computed, are deducted from the original values, exhibit relations very similar to those given by Mr. Pearson, and there is therefore no reason to attribute those relations to the fact of his arbitrary selection of a series of 3 years.

"This method of smoothing, I may explain, is based on the theory of the probability of errors. The fundamental assumption is that the value for any given year of a series, as resulting from the undisturbed operation of a simple cyclical law, may be displaced, owing to the operation of foreign unknown causes, by 1, 2, or more years, with a relative probability, proportional to the ordinates of the curve of probability; the time intervals being the corresponding *abscissæ*.*

* A rejoinder to Mr. Blanford's remarks, by Mr. A. N. Pearson, will appear in the Proceedings for December.

Mr. J. ELIOT fully agreed with the remarks of Mr. Blanford. It would not be possible, he believed, to obtain exact relations such as appeared to be given in the paper from the examination of the variations of less than five or six sun-spot cycles. The relations were derived from a period of less than two cycles, and the results could only be regarded at present as little more than interesting and suggestive coincidences. The weight of evidence at the present time seemed to be in favour of the assumption that the larger variations of rainfall in India were not directly and chiefly related to variations of sun-spot frequency, but to changeable local meteorological conditions which might in part be due to variations of the intensity of solar radiation. For example during the past monsoon, half of Northern India including Bengal and Behar has received about 10 per cent. less rain than the normal, whilst in the other half comprising the North-Western Provinces, Central Provinces, and the Punjab, he believed, the rainfall for the same period was in excess to at least the same extent. By no valid process of reasoning could such variations be directly correlated to the sun-spot frequency. Hence unless much larger periods are dealt with, or the variations due to changing local meteorological conditions are eliminated in such investigation, the conclusions based on such evidence would always be of doubtful validity and hence valueless for practical meteorological work, such as the prevision of the character of either the winter or summer rains in India. And the more exact the relations so obtained, the greater would be the probability of their being mere coincidences, which would disappear when additional evidence or data were utilized.

Mr. R. D. OLDHAM made some enquiries as to the periodicity of the sun-spot cycles, and their effect on meteorological and other phenomena.

In reply to Mr. Oldham, the PRESIDENT said:—"The supposed variation of certain terrestrial phenomena, uniformly with the variation of the sun-spots, rests at present on a purely empirical basis, and the degree of confidence with which the reality of such variations may be accepted is very different in different cases. That least open to doubt is the cyclical variation of magnetic disturbances, which is not I believe questioned by any physicist who has ever examined the evidence, and that of the *aurora borealis*, the connection of which with magnetic disturbances is very intimate.

"No meteorological phenomenon (using the term in its most restricted sense) exhibits the cyclical variation so undeniably and in so marked a degree as does terrestrial magnetism: but in the case of temperature, Köppen has shown with much probability that, in the tropics, the mean annual temperature has varied by a small amount *pari passu* with the varying frequency of sun-spots during two sun-spot cycles,

and went through a double oscillation in two succeeding cycles; and I may add that since his paper was written, his conclusion has been confirmed by the fall in the average temperature of India from the last sun-spot minimum to the present maximum. In the case of barometric pressure there was a very well marked oscillation during three sun-spot cycles in Western Siberia and European Russia, and a smaller but still decided oscillation of the opposite character in the Indo-Malayan region during about 2 sun-spot cycles (the whole period for which evidence was forthcoming). The evidence that Mr. Meldrum has adduced of the frequency of cyclones in the Indian Ocean, shows too I think a distinct periodical variation according to the sun-spot cycle. The evidence of a similar oscillation in the case of rainfall is more conflicting, but in certain regions there does seem to be such a periodical variation, although it is overlaid and much obscured by irregularites arising from other causes.

"Although therefore, the variation of meteorological phenomena in accordance with the sun-spot cycle has sometimes been unduly exaggerated, the evidence of its reality is cumulative, and is such as to warrant for it a high degree of probability. And if we are justified in assuming that the solar radiation is subject to a cyclical variation concurrently with the variable changes of photosphere, bearing in mind the maxim emphatically laid down by the younger Herschell, that any periodical oscillation in a cause, must be repeated and reproduced in every effect of that cause, however remote, we should have *a priori* grounds for asserting that the oscillation must make itself felt in all meteorological phenomena, since the sun's heat is the motive power of all, and the only issue open to discussion would be whether the effects are of such magnitude that we can hope to detect them with our present means and appliances.

"I have said nothing of the supposed manifestation of the sun-spot cycle in certain economic matters, as I am less able to form an opinion on the value of the evidence adduced in support of it. In so far as these economic conditions are dependent on meteorological conditions, assuming the fundamental postulate, Herschell's maxim of course holds good, but the more remote the effect, the greater is the likelihood of its becoming inappreciable to observation."

5. *Note on the Abstract of Mr. Blanford's Paper on the Theory of the Winter Rains of Northern India.—By* FREDERICK CHAMBERS, *Meteorological Reporter for Western India.*

In the abstract of the paper entitled "The Theory of the Winter Rains of Northern India," published in the Proceedings of the Asiatic

Society of Bengal for March, 1884, Mr. Blanford makes the following statement—"It has been suggested by one writer that barometric "depressions travel to us from the west across Afghanistan. This, "however, can be only a guess in the dark, for, at the time it was made, "there were no observatories to the west of India, nearer than Bushire "at the top of the Persian Gulf." It appears from the discussion which followed the reading of the abstract, that I am the writer here referred to, for Mr. Eliot is reported to have said "He" (Mr. Blanford) "points "out that Mr. Chambers, Meteorological Reporter to the Government "of Bombay, has asserted that these disturbances are due to the passage "of barometric depressions from Beluchistan and Afghanistan." The only occasion on which I have referred to the winter rains of Northern India, was in a letter to *Nature* published in the number for February 24th, 1881, Vol. XXIII, p. 400, where I incidentally made use of the following words: "It is now known that the short rainy periods of the "winter are periods of relatively low pressure. It is not improbable "that these periods of low pressure and the rainfall which accompanies "them are connected with the feeble cyclonic disturbances, which (as "appears from the charts of storm tracks published by the American "Government,) occasionally enter the north-west of India in the winter "months and travel down the Ganges valley, sometimes as far as Bengal. "The facts concerning these winter rains seems to accord far better "with this view of their origin than with the old notion of their connec-"tion with the upper anti-monsoon current. . . . . The question is as yet "involved in much obscurity and I must, with the above suggestion, "leave it to be dealt with by those more immediately concerned." Mr. Blanford appears to have taken up this question, and he arrives at the conclusion that "the cold weather rainfall is always the result of a local "fall of the barometer, the formation of a barometric depression, which "generally appears first in the Punjab or Western Rajputana, and then "moves eastwards."

It is clear that this conclusion agrees closely with my suggestion. But Mr. Blanford appears to take exception to my use of the word "enter," and his criticism deals exclusively with the side issue thus raised. It is a mistake to suppose that my suggestion specifies Afghanistan as the only direction from which the winter barometric disturbances may advance towards India, for it is obvious that they might move along the Mekran Coast and enter India across Lower Sind. In the one case they would not have to surmount any considerable elevation. In the other, they would have to pass over the mountains of Afghanistan or Beluchistan, and herein lies the chief objection to the hypothesis that cyclonic disturbances may enter the north-west of India.

It is well known, however, that cyclonic disturbances do cross mountainous districts, as, for instance, the Rocky Mountains of America, and the Western Ghâts of India, although, in doing so, they appear to suffer a considerable amount of disintegration.

It cannot be assumed, therefore, that they never cross Afghanistan or the northern and more elevated portions of Beluchistan, much less that they never cross the southern and lower parts of the latter state or never come to us from any westerly direction. The American chartographer has marked two winter storms as having crossed the north-western frontier of India during their passage eastwards. Mr. Blanford says, this can only be a guess in the dark, and to a certain extent he is correct, but the explanation is very easy. It is exactly the same as that which accounts for the dotted isobaric lines, drawn across the Bay of Bengal on most of the charts of the Indian Meteorological Department. All such lines are more or less hypothetical, and the American chartographer has acknowledged that his Indian storm tracks are, to some extent, doubtful, by drawing them in dotted lines. Guided, no doubt, by his knowledge of the general direction of storm tracks, and having traced a track, by means of actual observations, from one place to another, he applies the principle of continuity and extends the track over regions where observations are missing, indicating the fact of his having done so by dotting his lines. Such lines merely indicate probabilities of a greater or less weight, not certainties, and the fact is well understood by all meteorologists.

Mr. Blanford states that he has examined the registers of the Quetta Observatory, and that, with the exception of two doubtful instances, they do not give any support to the idea that barometric disturbances travel from the west across Afghanistan, and he *therefore* concludes, that in most cases, if not in all, these disturbances originate in India. Now it is only necessary to supply the omitted, but understood, major premiss of this syllogism, *viz.*, that barometric disturbances either travel to us from the west across Afghanistan, or originate in India,—in order to show that it cannot be accepted without positive proof, for Quetta is surely not the only gate through which these disturbances might enter India. The positive evidence in support of this premiss will probably be forthcoming in Mr. Blanford's complete paper, but in the mean time, I may point out that the minor premiss, *viz.*—that these disturbances do not come to us from the west across Afghanistan—does not appear to have a very firm foundation, and that the conclusion cannot, therefore, be regarded as a satisfactory one. On looking over the Quetta barometric curves, and comparing them with those of Bickaneer, I find the following instances of barometric minima which arrived

later at the latter station than at the former, thus indicating a movement of the barometric depressions from west to east.

1879, December 24—27.
1880, January 17—19.
1881, November 16—17.
„ December 23—24.
1882, December 13—15.
1883, January 24—25.
„ February 16—18.

The movements of the barometer at Jacobabad are, as a rule, allowing for difference of elevation, similar to those observed at Quetta, as might be expected from the small difference of longitude between the two stations, which is less than one hundred miles. Consequently, Jacobabad might be substituted for Quetta in the above list, without altering the order of the events, the barometric minima arriving at Jacobabad before they arrive at Bickaneer. I give also the following list of additional cases in which the barometric minima at Jacobabad *precede* those at Bickaneer or Neemuch.

1877, December 27—31 } marked in American charts.
1878, February 10—12 }
„ March 2—3
„ December 13—14.
1879, February 14—15.

In almost all the instances in the above lists, confirmatory evidence of a motion from west to east is obtainable from the observations recorded at other pairs of stations in Western India. I find also the following instances of eastward motion in earlier years, by comparing the observations recorded at Kurrachee and Deesa.

1858, January 23, observed at Kurrachee only.
1865, January 30—31.
1869, January 10—11.
1871, December 21—22.
1873, January 17—18.

The instance recorded at Kurrachee in 1858 was a very well marked cyclonic depression of the barometer. Unfortunately, no observations were recorded at Deesa on that occasion, but there is little doubt, that the centre of the disturbance passed to the northward of Kurrachee from west to east, for the wind was very strong from west at the time of the minimum pressure, and veered to north as the barometer rose. The Bombay barometer was but little disturbed. The isobaric charts

published in the Annual Reports on the Meteorology of India clearly show that in two of the above instances, *viz.*, those of 1879, December 24—27, and 1880, January 17—19, the disturbances extended beyond the north-western frontier of India, and the disturbance of 1883, January 24—25, is clearly another of the same kind. These disturbances can hardly have originated in India, for they all moved eastwards. Without observations from Western Afghanistan or from the Mekran Coast, it is, of course, impossible to arrive at a final decision, but the evidence now advanced is, I think, sufficient to render it highly probable that winter barometric depressions do occasionally, if not generally, enter the north-west of India. I believe too, that further investigation will show that rain frequently begins on the north-western frontier and afterwards extends eastwards, as in January, 1883.

The winter rains are as well marked at Quetta as at many stations in the Punjab and the North West Provinces. They are also quite perceptible at Kurrachee, as was long ago pointed out by Mr. Charles Chambers in his Meteorology of the Bombay Presidency.

Mr. Blanford's theory of the origin of the winter rains would not apply to these stations, unless it could be shown that the barometric depressions, after originating in India, sometimes move towards the west contrary to the usual rule.

The question as to whether barometric disturbances do or do not come to us from the west seems to me to be of importance chiefly with regard to its bearings on the problem of the prognostication of the winter rains, for, if my views are correct, it will become possible to utilize the ordinary methods of storm prevision for the purpose of forecasting these rains. With regard to the origin of the winter rains, the important point seems to be, that they are to be attributed to cyclonic disturbances, not to the upper anti-monsoon current, and herein Mr. Blanford's recent conclusion is in perfect agreement with my suggestion, as it is also with respect to the eastward motion of the barometric depressions when once formed.

The PRESIDENT said:—"The greater part of Mr. Chambers' paper is devoted to proving a point on which there is no dispute, *viz.*, that the disturbances which give rise to the cold weather rainfall generally move eastward. This fact is distinctly stated on page 6 of my paper in Part II, No. 1 of the Journal for this year, and I need notice it no further than to observe that, although generally, it is not always the case; an exceptional instance was quoted on page 7 of the paper, and another in which the disturbance was stationary, occurred in November 1883, producing very heavy snowfall on the Punjab Himalaya and in Cashmere.

"The point really at issue is, whether these disturbances originate

in India, or travel thither from the westward. In my original paper I have mentioned several instances, in which there was no room for reasonable doubt that the vortices which constitute the disturbance were formed over India itself: and the only cases which may be considered open to question are those in which the disturbance makes its first appearance on the western frontier, either in Sind or the Punjab. Of these, Mr. Chambers points to two, the tracks of which are laid down on the charts published in Washington, and which he considers to illustrate his position. The two charts in question are laid on the table. In one of them (that for December 1877), it will be seen that the only evidence of the storm in question is that furnished by the Indian observatories. The track, as laid down, begins on the western frontier of India, and the case has therefore no bearing on the point at issue. But it has an interest in connection with this controversy, because it shows that very erroneous conclusions as to the track of a storm may be drawn even from the comparatively abundant evidence furnished from 23 stations in India,* in other words, that even this evidence is insufficient for the deduction of an accurate track. The charts drawn in the Meteorological Office for the days covered by the storm track show that the vortex after reaching the Central Provinces, remained for two or three days almost stationary and then disappeared, whereas on the American chart the track is carried on across Bengal and up into Assam.

"In the other instance quoted by Mr. Chambers, that of February 1878, a track is laid down which, beginning on the coast of the Atlantic, west of Tangier, traverses three-fourths of the length of theMediterranean, the high plateau of Armenia, the Caspian, and a portion of Turkistan; then bending southwards it crosses the Hindu Khush and enters India about Multan. Finally it passes across Northern India and terminates somewhere about the Sandheads. A great part of this is dotted only, showing that it is considered to be uncertain. And, in point of fact, for about 2,000 miles to the westward of the Indian frontier the only evidence on which it rests appears to be that of two observatories, *viz.*, Tiflis, 1,600 miles from Peshawur, and Tashkend, 400 miles to the north. It will certainly be admitted by any one who has given much attention to this subject, that, on a disputed point of this kind, such evidence can go for very little. The question is whether an air vortex travelled this enormous distance, passing continuously from the Mediterranean to the high Armenian plateau, then skirting the Caucasus, and passing over the plains of Turkistan, finally surmounted the Hindu Khush before reaching the Punjab. Even in dealing with a comparatively limited extent

* The number which furnish synoptic observations to the American Signal Service Office.

of country such as India, the tracing of such a track is a much more deceptive matter than might be supposed. Two instances illustrative of this occurred in 1881, and are described and illustrated in the 3rd Memoir in Vol. II, of the Indian Meteorological Memoirs. The first is that of a storm which passed from the Bay of Bengal to the plateau of Central India, when it disappeared, and was followed five days later by the formation of another and independent vortex in Western Rajputana and Kattiwar, in the prolongation of the track of the first storm. The second is that of a storm which was formed off the coast of Ceylon, whence it travelled to Madras and broke up apparently against the Eastern Ghats. But, while this vortex was still in existence, an independent vortex was forming on the west coast, again in the prolongation of the track of the first storm. In both cases the first and second storms were demonstrably independent vortices, but they were separated by a few hundred miles only, distances insignificant in comparison with that which separates Peshawar from Tiflis.

"I think then that the question stands very much as it was stated in my original paper. There is really no evidence to show that the cold weather storms travel to us from the region to the west of India, while there are many cases on record in which there can be no reasonable doubt that they have originated in India. I would not deny that storms may originate on the Mekran coast and the Beluchistan plateau, nor that the mountain region is frequently included in the area of falling pressure, which eventually centres in the vortex. Evidence of this is no doubt wanting, but it would be quite consistent with the theory set forth in my paper, and I am quite content to await further evidence on the point of fact; but the reality of such a track as that laid down on the American chart for February 1878 I regard as in a high degree questionable."

Mr. ELIOT was unable to concur with Mr. Chambers that the question, as to whether the disturbances, which gave much of the cold weather rains, entered India from beyond the western frontiers or were generated in India itself, was a mere side issue. The fact that they are cyclonic disturbances has been known for some years. The question, whether they are generated in the majority of cases, as Mr. Blanford appears to have established, within the limits of our Indian meteorological system, or enter from without, is of importance theoretically as well as practically. The genesis of any class of atmospheric disturbance is a most important question, and it is no solution to remove their origin to a distant and unknown region. Hence if it can be established that the majority of these storms originate and are confined to the Indian area, a most useful step will have been made. It will then be possible

by the multiplication of accurate observations and their full discussion to deduce hereafter the laws of their genesis more or less exactly. Mr. Chambers' views (if as appears to be the case he still believes they enter India,) would suggest as a practical outcome the primary importance of the extension of meteorological stations from the India boundaries outwards, whereas Mr. Blanford's theory would require for fuller confirmation and practical utilization more accurate and a larger amount of observations in those parts of the Punjab, Sind and Rajputana which are at present very imperfectly represented in the Indian meteorological system. For these, and other reasons, the point which Mr. Chambers describes as a side issue, appears, notwithstanding the arguments he has employed, to be of primary importance, and Mr. Eliot ventured to remark that, if Mr. Blanford has established, as appears to be the case, that the originate in the majority of cases in India, a first step in advance has been made in their investigation.

The following communication has been received :—

List of the Butterflies of Calcutta and its Neighbourhood.—By LIONEL DE NICEVILLE.

LIBRARY.

The following additions have been made to the Library since the meeting held in September last.

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presented by the respective Societies and Editors.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR DECEMBER, 1884.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd December, 1884, at 9 P. M.

H. F. BLANFORD, ESQ., F. R. S., President in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Authors,—(1) Le Ferite avvelenate per effetto di Vipera, Scorpione e Tarantola, by Dr. Giuseppe Badaloni; (2) La Vaccinazione Primaverile nel Circondario di Frosinone nell' anno 1884, by the same; (3) Some Remarks on the Life and Labours of Alexander Csoma de Körös, by Dr. Theodor Duka; (4) The Higher Branch of Science, or Materialism refuted by Facts, by H. J. Browne.

2. From the Editorial Committee of the Norwegian North Atlantic Expedition,—Norwegian North Atlantic Expedition, 1876-78, XI, Asteroidea, by D. C. Danielssen and Johan Koren.

3. From the Director, British Museum (Natural History),—Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H. M. S. "Alert," 1881-82.

4. From the Colorado Scientific Society,—The Artesian Wells of Denver. A Report by the Special Committee of the Colorado Scientific Society.

5. From the Home Department,—List of Antiquities, Madras, Part II, by Robert Sewell.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :—

1. George M. Giles, Esq., M. B.
2. R. B. McCabe, Esq., C. S.
3. Prince Mirza Saraiya Jah Bahadur.

The following gentlemen are candidates for election at the next meeting :—

1. J. F. Duplessis, Esq., proposed by F. W. Peterson, Esq., seconded by C. H. Tawney, Esq., M. A.

2. A. E. Staley, Esq., C. S., proposed by H. Beverley, Esq., C. S., seconded by F. E. Pargiter, Esq., C. S.

3. T. F. Bignold, Esq., C. S., proposed by C. H. Tawney, Esq., M. A., seconded by F. E. Pargiter, Esq., C. S.

4. Col. G. C. De Prée, S. C., Surveyor General of India, proposed by Major J. Waterhouse, seconded by H. B. Medlicott, Esq.

The SECRETARY announced the death of Mr. R. H. Pawsey, C. S. Ordinary Member of the Society.

The SECRETARY reported that Mr. H. B. Medlicott had tendered his resignation as member of the Council in May last, but has been re-elected.

The SECRETARY reported that Mr. W. A. Bion had resigned the post of Assistant Secretary to the Society.

The SECRETARY announced that the editorship of the Prithiraj Rasan had been made over to Pandit Gopal Sastri of Benares by Dr. A. F. R. Hoernle, the present Editor.

The SECRETARY read the following extract from the Proceedings of the Government of India in the Home Department, dated 9th October, regarding alterations made in the Treasure Trove Act :—

Extract from the Proceedings of the Government of India in the Home Department (Public),—under date Simla, the 9th October, 1884.

READ—

Home Department Circular No. 46—1833-41, dated the 9th October, 1878.

Letter from the Government of Bengal, No. 1309, dated 27th October, 1883.

RESOLUTION.

The papers read relate to the arrangements at present in force for dealing with coins found under the Indian Treasure Trove Act. The existing arrangements do not appear satisfactory; and, as it is considered desirable to ensure that all old coins so found shall come under the inspection of skilled Numismatists, the Governor General in Council is pleased to lay down the following instructions for observance in all Presidencies and Provinces in future.

2. Collectors and District Officers should be instructed to *invariably* acquire under section 16 of the Act the *whole* of any coins found, whether gold, silver or copper, that appear to be old and not of British mintage.* The coins so acquired should be sent to the Asiatic Society of the Presidency in which the coins are discovered,† and the Society concerned should report to the Local Government in whose Province the coins are found the number and nature of the coins, and their probable numismatic value. When possible the Local Government should present the following institutions with one specimen of each coin which may be deemed by the Society deserving of preservation, *viz.* :—

* These include coins struck at Calcutta, Moorshedabad, Benares, Surat, Arcot in the name of Shah Alum, dated 19th Juloos.

† Burma, Assam, S. E. Provinces, Central Provinces will send to the Bengal Asiatic Society.

1. The Asiatic Society of the Presidency in which the coins were found.
2. } The Asiatic Societies of the other Presidencies in the
3. } following order—Calcutta, Madras, or Bombay.
4. The Indian Museum.
5. The British Museum.
6. The Lahore Museum.
7. The Nagpur Museum.
8. Any other local Museum the Local Government may select.

3. When only one specimen is found, it should be sent to the Indian Museum. If more than one specimen, but not sufficient for all the institutions named, are found, they should be distributed, as far as they will go, in the order laid down in the preceding paragraph. If a sufficient number of coins is found to leave a surplus after distribution to all the institutions named, such surplus should be offered for sale to collectors of coins at their numismatic value for one year—notice of the fact will no doubt be published in the Journals of the Asiatic Societies *gratis*, as a return for obtaining their specimens free of cost. These sales should be conducted by the Mint authorities of the Presidency to whom the Societies should make over the balance of the coins after distribution to the institutions. The Mint authorities might from time to time advertize coins in the Government Gazette, Part II, and keep a register ef Numismatists who wish to have the opportunity of purchasing coins. Any coins not sold, and any coins not worth selling, should be dealt with by the Mints and melted down.

4. Collectors and District Officers should, at the same time, be empowered to purchase any coins of the age and description stated above, when they are less than rupees ten in value, from finders, on the terms

laid down in section 16 of the Act. These coins should be also treated in the manner above described.

ORDER.—Ordered, that a copy of this Resolution be forwarded to Local Governments and Administrations for information and guidance, and that a copy be forwarded to the Director General of the Archæological Survey of India and the Revenue and Agricultural Department for information, and to the Department of Finance for the issue of the further necessary instructions; to the Foreign Department for communication, for their information and guidance, to all Political Officers.

(True extract.)

A. MACKENZIE,

Secretary to the Government of India.

The SECRETARY stated that the Council would be glad to receive the names of any members interested in coins, who might wish to be entered in the Register of Numismatists to be kept by the Mint authorities, and referred to in para. 3.

The following papers were read—

1. *List of the Butterflies of Calcutta and its neighbourhood with notes on habits, food-plants, &c.—By* L. DE NICEVILLE.

Mr. de Nicéville said: "I do not propose to read through this list of the Butterflies occurring in Calcutta and the neighbourhood numbering 158 species, as I fear it would not prove very interesting to the majority of the members of the Society now present, but I would wish to bring prominently to their notice the large amount of seasonal dimorphism that apparently takes place among seven of the commonest of the species to be met with here and mentioned in the paper. In the box which I will now pass round are exhibited the uppersides of fourteen Butterflies which I consider to represent seven species, though until now I believe all entomologists have considered them to be quite distinct. During the last nearly nine years I have collected Butterflies in Calcutta, and have always noted the months in which I met with the different species. In this way I became aware that certain closely allied species occurred at particular seasons only, and when these species were grouped together according to the time of the year they were met with, it became apparent that those which occur in the rains were strongly ocellated forms, whilst those occurring at other seasons had the ocelli reduced to mere rudiments, or were absent altogether. Why the wet season should beget a generation of "eyed" Butterflies, and the dry season a generation of "eyeless" forms I am quite unable to offer a conjecture.

"In addition to the absence or presence of ocelli, some of these seven species present other seasonal differences. In *Mycalesis perseus* and *M. mineus* on the underside in the rains generation the discal white line is very prominent, it is obsolete in the dry season generation; and in the latter form of *M. mineus*, the forewing is much more produced at the apex, making the outer margin straighter. In the dry season form of *M. leda* the forewing is more falcate, and the underside is not striated. In *Junonia almana* also there is some considerable difference between the two generations in the outline of the wings, in the dry season form the forewing is much more falcate, and the hindwing has the anal angle produced into a short 'tail,' these characters being present in the wet season brood, but they are less conspicuous.

"Should my conclusions with regard to these species be accepted, considerable changes will have to be made in the synonomy of all of them. In my paper I have not gone fully into this matter, but the following short table will bring out the principal points:—

Dry Season Form.	Wet season Form.	Combined name by which the species should be known.
Mycalesis indistans, Moore.	*M. mineus*, Linnæus.	*M. mineus.*
„ *perseus*, Fabricius.	*M. blasius*, Fabricius.	*M. perseus.*
„ *runeka*, Moore.	*M. medus*, „	*M. medus.*
Melanitis ismene, Cramer.	*M. leda*, Linnæus.	*M. leda.*
Ypthima marshallii, Butler.	*Y. philomela*, Johanssen.	*Y. philomela.*
„ *howra*, Moore.	*Y. huebneri*, Kirby.	*Y. huebneri.*
Junonia almana, Linnæus.	*J. asterie*, Linnæus.	*J. almana.*

"There is one other matter which I would like to bring to your notice, and that is the probability that *Papilio dissimilis* and *P. casyapa* are one and the same species. In appearance, as you will see at once from the specimens exhibited, they are exceedingly dissimilar, but from the fact that the larva of both feeds on the same plant, that the larva and pupa of both are indistinguishable the one from the other in form, markings and colouration, and lastly that nearly everywhere where one of these two species, or allied forms, occur, there the other will be met with, I have but little doubt in my own mind that they are dimorphic forms in both sexes of one species. This matter can only be conclusively settled by breeding from the egg, and I hope soon to be able to carry out the experiment."

"I have described one new species only in this paper, which is allied to *Catochrysops pandava*. I have named it *C. bengalia*."

2. *Notes on Indian* Rynchota, *No.* 1.—*By* E. F. T. ATKINSON, B. A.

(Abstract.)

This paper is a synonomic list of all the species of stridulant HOMOPTERA that have hitherto been described or reported from British India and its Dependencies. It comprises 94 species distributed as follows amongst the following genera:—*Polyneura* 1, *Pœcilopsaltria* 1, *Platypleura* 15 (3 new), *Tosena* 4, *Huechys* 7, *Scieroptera* 3, *Graptotettix* 1, *Gœana* 6, *Dundubia*, 15, *Cosmopsaltria* 7, *Leptopsaltria* 1, *Pomponia* 7, *Emathia* 1, *Cicada* 8, *Cryptotympana* 1, *Fidicina* 5, *Tibicen* 1, and *Mogannia* 10; and numerous notes which, it is hoped, will prove useful to Indian collectors.

The paper will be published in Journal, Part II, for 1884.

3. *List of the Lepidopterous Insects collected by Mr. Wood-Mason in Cachar. Part* 1. Heterocera.—*By* F. MOORE, *Associate Member, Asiatic Society of Bengal.*

(Abstract.)

This paper enumerates 89 species of moths belonging to the groups *Sphinges, Bombyces, Noctues, Geometres, Pyrales, Crambices,* and *Tineines.* Mr. Wood-Mason explained that he had collected these moths amongst other groups of insects during his deputation to Cachar to enquire into and report upon the ravages of the tea-bug and the tea-mite, in order to test the plausible theory of many planters that the former of these pests is disseminated by insect agency; and, in reply to the President, stated that the planters had mistaken the numerous red larvæ (of *Trombidium*) or reddish or yellow (*Gamasi*, etc.) acarine parasites of insects for the red-mite, which does not live parasitically upon the bodies of other animals at any stage of its existence, but, on the contrary, undergoes its whole development and growth, from the egg to the adult state, on the tea plant. Lists of all the other orders of insects collected and examined for the same purpose would be sent in due course to the Society for publication in its journal.

4. *A description by the same author was also read of a new Lepidopterous insect belonging to the* Heterocerous *genus Trabala, collected by* DR. J. ANDERSON *in Mergui.*

Mr. Moore, has given it the name of *Trabala irrorata.* The list of species which accompanies this description will be published by Dr. Anderson in a separate work on the Zoology of Mergui.

The two papers also will be published in the Journal, Part II, for 1884.

5. *Notes on "Kashgaria."**—*By* Rev. Geo. Parker, of the China Inland Mission, Shanghai.

References.	Criticisms.
Chapter I, page 21. "For instance, there are the Khotan-Darya, the Yarkend-Darya, the Kashgar-Darya, the Aksu-Darya, the Koocha-Darya, the Haidoo-Gola."	Chapter I, page 21 last line and note 2. Is not Karashar-Darya the Turkish and Haidoo-Gola (Haidwin-Kooya) the local Kalmuk-Mongol name of the river?
Note 2. "Otherwise called the Hoidwin-Kooya. This river passes under Fort Kara-Shar, and hence was formerly wrongly called the Karashar-Darya."	
Chapter II, page 49 note. "Mr. Shaw says "A *tangah*, or *tenga*, consists of 25 small copper "coins" (of Chinese make with square holes through them) called *dah-chan*, each of which is worth two *pul* (imaginary coin)." * * * "The Khotan *tangah* consists of 50 copper *shu-chan*, which are only slightly smaller than the Yarkend *dah-chan*."	Chapter II, page 49 note. "Shu-chan" "dahchan" are the Chinese words, sian chien, small coins, and ta chien, large coins.
	Chapter II, page 51 "Doolans." They sometimes call themselves Mogols." In west Kansu is a Mongol people called "Tu-reu" (aborigines) by the Chinese. My colleague in a communication to "China's Millions" says he

* Eastern or Chinese Turkistan: a historical and geographical sketch of the country: its military strength, industries and trade by A. N. Kuropatkin, Colonel on the General Staff of the Imperial Russian Army &c., translated from the Russian by Major W. E. Gowan. Calcutta; Thacker, Spink and Co., 1882.

was told they were Mussalmans. The "Tu-reu" live at a town called Pan-an west of Siun-hua on the right bank of the Yellow river. East of Hochan is a Muhammadan people called "Tong hiang" (east villagers). A trader and innkeeper at Sonanba, their chief village, told me that their language was the same as that spoken at Tingüening, west of the Alashan on the north of the province and also by the "Tu-reu" at Pan-an on the west. In Stanford's "Asia" pp. 543 and 584, the Mongols of Ala-shan are said to be *Kalkas*. On the map in the Chinese character, prepared by the French Missionaries in the last century, the name Kalka occurs south of the Ku-ku lake as well as the Kalmuk-Mongol tribes of Turgut, Koshot, Choros and Koit. I hope to settle the point this year by a visit to West Kansu as to the accuracy of my supposition that the Tu-reu and Tong-hiang are Kalka-Mongol. *At the bottom of p.* 50 it is said that the Doolans immigrated to Kashgaria 150 years ago. Whence came they? In "the Russians in Central Asia," (Paul Kegan and Co.,) it is stated that they are a Muhammadan tribe, but not, if my memory serves me right, of what race.

Chapter IV, pp. 89-91. "In the year 134 B. C., the Huns, under the leadership of Lao-Khan, marched against the *Gets* or *Yuts* (the Chinese Vouëi-Tchi), people of Mongol origin, who dwelt in the country that at present comprises the Chinese province of Shan-Si. * * The Gets, not wishing to become subjects of Lao-Khan, set out to seek for themselves a new place of abode. They then became divided into parties, the first of which moved to the N. E., where it came into collision with the *Saks*, the inhabitants of Eastern Turkestan. The other party moved in a southerly direction, crossed the snowy range, and, pouring into the valley of the Indus, laid waste the kingdom founded in India by Alexander of Macedon."*

* "Mons. Huc ("Souvenir d'un Voyage dans la Tartarie et le Thibet") supposes that the *Gats*, after crossing the Tian-Shan (which he calls Moosoor), settled on the banks of the Ili. This party, he says, were the *Torgots* or *Torgouts*. Now the *Torgouts*, as is known, are a Kalmuck race, the same, in fact, as that which still wanders over the valley of the Ili, but chiefly in the valleys of the Koongas and of the Yuldus. In like manner, Mons. Huc supposes that that portion of the *Gets*, which moved into the valley of the Indus, there encountered a Bactrian race, and, after struggling with it for a long time, finally established itself in Bactriana. This portion of the *Gets*, in the opinion

Chapter IV, pages 89-91. SIKHS and JÁTS of the Punjab. Saks and (Gets, Gots, Yuts, Yatts) Chinese (Vonëi-tchi.) *Shak tin* or *tim* (cheu); name of an ancient Tatar people living in Manchuria, previous to our era (later *soh.*) These people are the ancestors of the Joochin or Joochi.

"The *Gets*, who poured into Eastern Turkestan, in some measure allied themselves with the *Saks* and the *Yats* or *Yuks*, but they drove the bulk of these people to the S. and W."

"After the inroad of the *Huns* into Eastern Turkestan, the inhabitants of that country, the *Gets* and the remaining *Saks*, moved in advance of their conquerors, partly towards the west, and partly towards the south, in the direction of Kabul and Kashmir."*

of Mons. Huc, was called by the Greeks the Indoskifs."

* Dr. Bellew ("Kashmir and Kashgar, 1875") draws some very learned conclusions in support of his ideas as to the movement of the *Saks*, and after them of the *Gets (Gots)* and *Yuts*, who were driven by the *Huns* or *Uigurs* from Eastern Turkistan, partly towards the west into Europe, and partly towards the south to Kabul, Kashmir and India. He says, that in Europe traces of these peoples are preserved under many names, such as *Saksonia*, *Yutlandia*, and *Gotlandia*; that the names of the settlements which they abandoned in Kashgaria are repeated in the south; thus, *Kazi* or *Benares (Kazigar, Kashgar)*, *Hari* or *Herat (Hari-kend, Yarkend)*, *Koocha* or *Koochar (Kachar)*, *Koorlia (Kelya)*, *Kitan* (the ruins known under the name of *Khotan)*. Furthermore Bellew says that the country, known in the time of Timur and now as Kashgaria, was called *Yatta*. Lastly, he supposes that the race of *Yatts* or *Jats*, who now dwell in the Punjab, are descended from those exiles from Kashgaria who left it at the time when that country bore the name of *Yatta*."

sok. (shot)-lek. The name of an ancient kingdom at the time of Han dynasty in the country of Kachgar, see Kashgaria, p. 118 (IV) modern pronunciation soo-le.

sat *(sak-tat)* An ancient name of Yarkand. See Klaproth.

"Those Huns who mingled with the remaining *Saks* and *Gets (Gots)* and formed the population of Turkestan became somewhat changed in later times owing to the inroads of other proples who came with the various Arab conquerors."

Tot-ka (ga)-lat (lap) (Tukhara) literally the kingdom of the Yuet-chi (perhaps the Jats of North-Western India), a topographical term designating a country of ice and frost (tuchara), and corresponding to the present Badakshan which Arab geographers still call Tokharestan. 2. An ethnographical term used by the Greeks to designate the Tocharoi or Indo-Scythians, and likewise by Chinese writers applied to the Tocharoi Tatars, who, *driven on by the Huns* (180 B. C.) conquered Trans-Oxiania, destroyed the Bactrian kingdom Tahsia (B. C. 126) and finally conquered the Panjab, Kashmir and the greater part of India.

"Those *Huns* who, after continuing their movement towards the west, drove from before then the various small tribes of nomads whom they came across in their progress onwards, began with their assistance to make, in the beginning of the 4th century, inroads into the Roman Empire, and in the 5th century to pour into Germany.* In Europe,

Kut (gut)-tek Goths to the northwest of * and to the northeast of the * *in the country of the Kirghiz* (200 A. D.)

* "Mons. Huc says, that the *Huns*, who began, during the year 376, their devastating inroads into the Roman Empire, first of all subdued a nomad race that wandered over the country of the *Allani* (le pays des Alains of Klaproth;

* Word in Chinese character not decipherable.

these Huns went by the name of *Uigurs, Ugras, Ongras*, and their representatives, at this time, are called Vengras or Hungarians."

Nget-(yet)-det (tik)-dek (dik) Their ancient country was to the north-west of China to the north of the mountain * Nanshan (300 B. C.) *They were driven from this country by the* * *Huing-Nu*, and migrated into Trans-Oxiania or Marer Alnahar. A part of them migrated to the west and crossed the Tsung-ling mountains. They are the same race as the Chiang or Thibetans. See Klaproth.

See Williams' Chinese Syllabic Dictionary under * "*the Getæ or ancient Scythians* near the sea of Aral."

Dr. Bellew says that Kashgaria formerly was called *Yatta*. Kashgaria, p. 91, note. Chapter IV, pp. 92, 93. Kirghiz.

Chapter IV, p. 103. ("We should here remember, that the Djoongar or Kalmuks called themselves a Mongol race, and that they dwelt in the valleys

The Djoongars (Kalmuks) are not Uigurs but Mongols, see p. 103, Chapter IV.

the Alano-Gothes), and these people partly sought flight in the mountains of the Caucasus, and partly settled on the Danube. In their further movements, the *Huns* or *Uigurs* drove in front of them the *Sevs, Gots, Gepids* and *Vandals* (les Sueves, les Gothes, les Gepides, les Vandales), and, together with these peoples, overran Germany, in the beginning of the 5th century."

* Word in Chinese character not decipherable.

of the rivers Ili, Tekes, Koonges and the two Yulduz)."

The last line of p. 92 referring to the Djoongars says: "The *Mongol* type of countenance is especially well-preserved amongst the first of these."

* *Wok* or *Wot (mot) Son.* Their * or king lived in the city of * situated to the north of the Celestial mountains and to the east of the lake * which is the Temomton of our day. *This people had blue eyes*, and *fair or red hair.* In the third century B. C. they lived together with the * to the north-west of China.

Kot-(gap)-Kat (gap)-Si (Kakas G. P.) The ancestors of the Kirghiz of our day. *They are probably a people of the Samoyede race* blended with the * who belonged to the same fair race as the * (The * Ting-Ling dwelt in Siberia upon the Irtyshe, Ob., and upper Yenisei (200 B. C.). Under the Han dynasty (200 B. C.) the *Hakas* were called * Kin-Kun, and it was not till the time of the * Tang dynasty (700 A. D.) that they received the name of * Their settlement began to the west of the Uigurs and to the north of * or Kharashar and extended northward as far as the Irtyshe and the Ob, in Southern Siberia. *The men*

* Word in Chinese character not decipherable.

were of tall stature with light hair, fair complexion and blue eyes. These people were formerly commingled with the Turkish and Mongol tribes which made them lose their ancient language in the place of which they had adopted the Turkish dialect. This commingling with these tribes has not, however, quite destroyed the characteristic marks of their external appearance; for one often still sees among the Kirghiz people with red hair and blue or green eyes.

The Chinese now call them *Kazak*.

Chapter IV, p. 93. "In Huc's "Souvenir d'un voyage dans la Tartarie et le Thibet," Chapter IV, mention is made of a race of Mongols who are called *Kalkhas (Khalkhas)*. This fact involuntarily leads us to the thought, are they not allied to the *Khakes* of Djoongana, from whom Valikhanoff derives the Kirghiz?"

The *Booroot* and *Sartzar* are perhaps small divisions of the Kazak. The author's thought that the Khakas (older name for Kirghiz) may be the same as the Kalkas-Mongols is far beyond the mark. The Kalkas are the Mongols of Mongolia proper, and more numerous than either the Buriat of Siberia, Baikal region or Kalmuk of Tian-Shan and Koko-Nor.

Chapter IV, p. 113. "The supposition of Mons. Heins that the Doongans and the Uigurs are one and the same race, has evidently no foundation. Apart from the fact that this question has already been settled by modern explorers, I, whilst admitting that the Chinese did deport a portion of the Uigurs into their western provinces, allow myself

Chapter IV, p. 113. The Doongans are not Uigurs but of Persian descent. They came to China, a company of 3,000 *men*, during the Tang Dynasty and settled in the present provinces of Sheust and Kansu in the eighth century. They were not deported to Zungaria last century, but went there, like the Manchu Sibs, Solons and Mongol Tsakhars, as mili-

to suppose that the name *Doongans* referred only to those exiled Uigurs who were largely mixed with Chinese. To the Uigurs who remained in Eastern Turkistan the name *Doongans* can in no way be applied. At present in all the towns of Kashgaria, one general and very similar type of countenance prevails. This proceeds from a mixture of a Mongol race with a Turkish or, perhaps, with an Indo-Germanic, in which Turkish predominates. The inhabitants of Kashgar cannot be distinguished from the inhabitants of Khotan, and the inhabitants of Khotan from those of Aksu. In the latter city the prominent type of a Mongol race is more noticeable. The Doongans form a marked contrast to the original inhabitants, for the Doongans only came into Kashgaria with the Chinese in the middle of the past century. Amongst the Doongans the Chinese admixture is so apparent as to be recognizable without mistake amongst hundreds of natives."

tary settlers, see native maps. The disuse of the Persian tongue which they spoke when they left Samarcand is accounted for by marriage with Chinese women; this also accounts for their Mongol features, see "Huei Hueiventui." Dungan or Tungan is the Turki name for Chinese-speaking Muhammadans, see p. 154, note 2.

Chapter IV, p. 103. "Taking advantage of the fall of the Mongol Dynasty of Han in China, the Djoongars, in the beginning of the 17th century, concluded an alliance, at the head of which they placed Haldan-Bokoshta, a Khan of the Tchorors line."

Chapter IV, page 103, last paragraph, Mongol Dynasty of Han read *Yuan*.

Chapter IV, p. 154. "Sosnorski believes that the origin of the word "Doongan" relates to the commencement of the rising of the Chinese Musalmans in the year 1861. According to him the insurrection first began in the neighbourhood of fort Doongan, which is situated in the province of Shen-Si."	Chapter IV, page 154, "Fort Doongan." The rebellion began in the city of Lin-Tong east of Sigan.

6. *Notes on Akas and Akaland.—By* Major C. R. Macgregor.

(Abstract.)

The history of the tribes on the north-east frontier is very obscure, and that of the Akas (or Hrusso clan) is no exception; they assert that they came originally from the south-east of the Assam valley, and this is not improbable, when the fact that their language assimilates more with that of the tribes bordering Manipur than with that of their immediate neighbours, the Dufflas and Bhutias, is taken into consideration. The Akas also assert that they are of noble origin, and every free Aka considers himself more or less a 'Raja;' the manner and bearing of the free Akas is certainly in favour of their claims, as they assume a very bold and dignified air; '*Noblesse oblige*' is clearly marked in their deportment, if not in their conduct.

The Hrusso clan is divided into two sections, and locally called Kapachors (thieves of cotton) and Hazarikhowas (eaters of a thousand [hearths]): the above-mentioned names were bestowed by the Assamese, and are now adopted by the Akas themselves, who are rather proud than otherwise of the appellations. The Akas, like most of our mountain tribes, delight in terrifying the dwellers in the plains, on whom they look with the greatest contempt. I was informed by an Aka Raja (so called) that the Kapachors had divided the mouzah of Balipara among themselves, and to each "Raja" was apportioned a certain number of houses, the inhabitants of which were bound to give lodging and food gratis to their respective feudal lords (and their followers) whenever it might please them to visit the plains. The inhabitants are also expected to present a yearly tribute in the shape of pigs, fowls, and silk cloths.

In 1829 (four years after the British assumed the Government of Assam) a Chief of the Akas called Tagi (the father of Mehdi, the present Chief) was lodged in jail at Gauhati and released in 1833; four years of captivity did not improve the Chief, for in 1835 he connived

at, if he did not actually join in, an attack on a guard of the 42nd Regiment, A. L. I., at Balipara. On that occasion seven sepoys with their families were "cut up." In 1840 the Akas captured three natives of Balipara, and in 1841 Tagi was induced by the astute Political Officer to surrender himself. Before his surrender, Tagi, however, wisely released all the captives. On his surrender he was pardoned, and a pension of Rs. 20 conferred on him. In 1844 this pension was doubled, and in 1848 was raised to Rs. 520. Since then the Kapachors have received that sum yearly; the Hazarikhowas receiving a yearly sum of Rs. 180.

About 300 years ago the Akas, under a Raja called Bam, were settled on the right bank of the river Bhoroli near Balak Pung, and to this day there are evidences (in the shape of masonry, &c.), which bear witness to the occupation of that site. In those days the Akas evidently built themselves (or made their slaves build for them) more substantial houses than they do now. The only specimen of a stone house which I have seen in Aka land was one to the west of Laby's villlage. This house was built at the instigation and for the accommodation of a Buddhist priest from Thibet, who about half a century ago used to pay the Akas yearly visits for the purpose of converting them to Buddhism. I believe that as long as the priest was with them they adopted the tenets of Buddha, but directly the man died they resumed the old demon worship of their fathers.

In considering the political relations of the Akas with the British, I should mention that it was in 1868 the Akas first became alive to the fact that they possessed a valuable and marketable commodity in the form of rubber. It is really to the rubber question (*i. e.*, whether the Akas have the right, which they claim to have, to cut rubber down to the Bhoroli or not) and the action taken by the Forest Department with reference to the claim that the late misbehaviour was principally due.

The Akas intermarry with the Meri-Akas to the east and with the Mijis to the north; but seem to have no social relations with the Daphlas or with the Bhutias.

The country inhabited by the Akas (of which there are two clans, *viz.*, the Kapachors and Hazarikhowas) is situated on the Sub-Himalayan Range to the north of the district of Darrang on the right bank of the Brahmaputra in Assam.

Roughly speaking, the Aka country lies between the parallels of 27° and 28° north latitude and 92° and 93° east longitude.

The *Kapachors* are bounded on the north by the Mijis and Diging River; south by the Darrang District, Assam; east by the Phusung River and Meris; and on the west by the Hazarikhowa-Akas.

The *Hazarikhowas* are bounded on the north by the Bhutias and Mijis; south by the Darrang District, Assam; east by the Kapachor-Akas, and on the west by the Tenga River.

The principal rivers in the Aka country are the Bhoroli and Maj (Middle) Bhoroli, Phusung (or Bichung), Tenga, Diju, Diging and Kameng (the last-named is to the north-west of the Meri-Aka country).

The boundary line between the Darrang District and the Aka country crosses the Diju about 3½ miles to the north of the Mukh. This boundary line was settled by the Civil Officer of Darrang with the Aka Chief Mehdi in 1872.

There are two passes into the Aka country from the plains, *viz.*, the *Bhoroli* and the *Balakpung*. To reach Mehdi's village, using the former pass, the Bhoroli River has to be crossed twice, at Diju-Mukh and again at Maj-Bhoroli, and the Tenga River has to be crossed once. When the Balakpung pass is used, the only river of any size to be crossed is the Tenga, and this stream, which is only knee deep (in the cold season), is crossed near its junction with the Shooshung stream. The river Tenga bifurcates at the place where it is crossed in the Balakpung, Jameerigaon route, and an island is formed, which makes a capital site for a camp.

The Akas are demon worshippers, *i. e.*, they believe in the existence of various good and evil spirits, who, if not propitiated, will harm them. Hunter mentions the names of three gods, Fuxu, jungle god, Feiran, war god, and Situ, household god; but I could get no definite information about these three deities—in fact, an intelligent Aka, whom I interrogated on the subject, said he had not heard of them. Once a year the Akas pay a visit to the Maj-Bhoroli River, and a sacrifice consisting of 2 mithun, 2 she-goats, 2 pigs, and 2 cocks is made to propitiate "the spirit of the waters." If a person falls ill, pigs and fowls are sacrificed (and eaten by the relations and friends of the sick person!) and invocations are made. A few simple herbs are used as medicine, and for all stomachic disorders ginger is freely used. The Akas call their principal deity "Karza," the day god is called "Ju" = sun, the night god "Hubee" = moon, the stars "Neitzi" are minor deities. Some years ago a Buddhist priest from Thibet visited the Akas. This man seems to have had but a very partial and temporary success in inculcating the teaching of Buddha. The visits of the priest were repeated for several years, but in 1870 he died. During the time that the visits were made, Buddhism was perhaps dominant, but on the expiration of the visits the Akas lapsed again into the old spirit worship. A stone hut on the ridge to the north-west of Laby's village remains as the sole memento of the Buddhist's visit. At Khowagaon, a village to the north

of Mehdi's, some flags were found, supposed to be relics of Buddhism. The Akas usually consult omens before going on the war path, &c., and sacrifice pigs, cocks, and goats to propitiate the spirit of war. Mithun are but rarely killed on these occasions, as they are considered too valuable. On the capture of the forest Babus by the Akas, the omens were consulted as to their fate. The decision was both for and against their murder; so I imagine that the Akas, like the Nagas, interpret their omens to suit their own purposes, and have no faith whatever in the auguries.

Corpses are buried, not burnt; a small square stone building about 4 feet high is sometimes erected over the body. A species of altar of split wood, streaked with blue dye and smeared with fowl's blood, is placed near the body, which is always interred with the clothes worn by the individual when alive. Brass cooking utensils are (when the deceased was fortunate enough to have possessed them) placed in the grave.

Among the Akas women are respected. The forest Babus who were domiciled during their captivity in an Aka household said that nothing astonished them so much as to see the respect paid to the women. When there are guests of both sexes in the house, the women are served first. The high estimation in which the Aka male is said to hold his better-half does not, however, prevent his using her for all the hard work in the fields, whilst he stays at home and looks after the children. Marriage is a question of mutual liking (men generally select their brides with reference to their physical qualities). The ceremony of marriage generally takes place when the girl has attained her 14th year. Should the union not be a fruitful one, the man is at liberty to take another wife. A young girl (mimsa) paints her face before she becomes a married woman. A young man (mim), who (as is usually the case among hill tribes) is far vainer about his personal appearance than a young woman, also paints his face, mere smudges, not in the artistic manner the Eastern Naga paints. At a marriage, mithun are generally killed, and a feast is given. The bridegroom gives mithun and pigs to the bride's father as a dowry. After the feast, the young man takes his bride to his father's house, and she becomes an inmate of the common dormitory. Although privacy in the married life of an Aka is unknown, yet the marriage tie is usually kept unbroken. Husband and wife eat from the same plate (a plantain leaf generally) together. Children are fed separately; the mother cooks the food for the household and feeds the children.

In the evenings, when seated round the hearth (which is placed in the centre of the room), young men and girls dance in turn, moving their hands and feet with a kind of cadence, a small drum being beaten

by one of the spectators during the performance. At the end of the entertainment the old women dance to the music of a fiddle. The Aka fiddle is a curious kind of instrument, hairs from a mithun's tail serve as strings for the bow and fiddle, and a piece of skin, well stretched, covers the bamboo cup which is used for the bowl; the rosin with which the bow is occasionally rubbed is attached in the most convenient manner to the side of the bowl. I must say that the sound produced is of the mildest description, but I am told that the Aka will listen to it for hours with the greatest pleasure. During the dances every one, down to the smallest child, drinks the rice wine, which is luckily not of an intoxicating nature.

There is very little crime among the Akas; thefts are very rare, there being hardly anything to steal which is not common property. Murders are also of very rare occurrence. Should a man kill another, a "*punchayet*" is held in the village, and the punishment awarded is generally that the murderer should pay a fine in mithun to the relations of the deceased, and that he (the murderer) should be banished from the village. I was informed that on one occasion a Miji had killed a Kapachor, so three men of the Kapachors went to the Miji village where the murderer dwelt, took him outside the village, and put him to death with their swords, the other inhabitants of the Miji village approving, or at any rate not preventing, the deed.

The Akas are very hospitable, and guests are treated to the best of everything, even children (who are very obedient) are taught to be hospitable. The houses are substantial erections, the sides of which are planked; they vary in size. Laby's house, an average one, was 63 feet long by 15 feet wide, the height the machan (*i. e.*, floor) is from the ground, depends on the slope of the ground—it may be 2 feet at one end and 6 feet at the other. One of the houses in Mehdi's village measured 140 feet in length and 22 feet in width. In the large houses there are partitions and swing doors; the fireplaces are usually in the middle of the dormitory, and round this all the members of the family, both young and old, sleep. The roofs are formed at a good angle for running the rain off, by placing mats over the bamboo frame-work and covering them with cane leaves; the canes reach to the machan. There is very little attempt in decorating the front of the house; a few horns of the mithun, &c., are sometimes put up. Pigs and poultry live under the floor. Sanitary ideas do not exist in the Aka mind.

The Akas wear a kind of toga made of rough Assamese silk or of Bhutia blanket cloth. Leggings are also worn; these are tied at the knee and folded round the leg, giving them the appearance of trousers. The arms are bare, and they do not wear shoes. Their head-covering

consists of cane hats like those worn by the Daphlas, or rough felt skull caps similar to those used by the Bhutias. Occasionally a three-decked cane hat, like those used in Thibet, is worn; but the use of this hat is, I believe, confined to the Chiefs. Ear-rings and beads, of which the Akas (in common with all the tribes on the north-east frontier) are inordinately fond, complete the costume. A *kamarband* in which a sword is placed, is usually part of the dress. The women are decently clad, generally in Eria silk clothes; they wear necklaces of beads, and some of them carry about egg-shaped silver cases obtained from Bhutan. These silver ornaments are much valued, and worn only by the wives of Chiefs.

The principal weapon of the Aka is a long sword, the blade being 4 feet long and handle about 4 inches. Near the hilt the sword is not sharpened, and often a piece of cloth is folded round, so as to enable the owner to use the sword in a two-handed fashion, and in this way the weapon is generally used. The bow and arrows constitute, however, the most effective weapon of the Akas; the bow is an ordinary one (I did not observe any cross bows), the arrows, some of which have iron barbs, are usually poisoned with aconite; the aconite is mixed up with some kind of adhesive substance, and stuck on to the arrow head. The poison is obtained from the Mijis, who get it from the higher ranges behind them. I was informed by an Aka that it was expensive, a pig being usually the price of a very small piece. Immediately a wound is received, it should be well scoured out with a knife, well washed with water, and if the wound is in a limb, a bandage should be tightly tied above; stimulants should also be given to the wounded man. Some Gurkhas used the bark of a tree, which they first chewed into a pulp. When a man was hit, some of this pulp was given to the man to chew and some forced into the wound. The bark had a smell like lemon. I saw this used in two cases, one of which was fatal and in the other the wounded man recovered—the recovery was, I think, due to the skilful treatment of the wounded man by the surgeon and not to the supposed antidote. I only mention the use of this bark as an antidote believed in by the Gurkhas, as any information bearing on the subject may be useful.

The Akas possessed a few old muskets and a few guns, which they had looted from Balipara (these were, however, all given up before the expedition left the hills).

"Panjis" (sharp pointed pieces of bamboo hardened by being half burnt) are placed in the ground to retard the advance or stay the pursuit of an enemy. They are very good obstacles against men who are not well booted. A collection of rocks placed upon a kind of scaffolding

of bamboos and held in position by single canes, which can be severed at a blow, are, owing to the precipitous nature of the hills, most formidable obstacles. These obstacles, commonly called "booby traps,' are usually placed so as to command a path ascending a steep hill side; and as the path generally zigzags, the rocks, when liberated from the cage, strike it in several places before finding a resting-place at the bottom.

The stockades of the Akas are strong and well-built; they are constructed of double rows of bamboos placed upright in the ground. In the middle earth and stones are placed to a height of about 4 feet; the stockades being 10 or 12 feet high, a perfect *chevaux de frise* of pointed bamboos are firmly secured in the stockades (so firmly are the pointed bamboos secured that it takes one a considerable time to cut a way through). These stockades are constructed near the summit of a hill and in such a position that it is almost impossible for a two-legged animal to "turn" them. The Akas keep a good supply of large stones behind the stockades, to hurl at an advancing foe.

In my opinion the Aka does not take kindly to the war path. A thieving expedition, where there is a minimum of danger and a maximum of *loot*, is more in his line. In the late expedition, the Akas relied to a great extent on the (supposed) inaccessibility of their country, and this, combined with their ignorance of the nature of the troops they were to meet, gave them a certain amount of confidence. At the action at the Tenga River on the 8th January, they blew horns and kept up a peculiar kind of war chant; this was done probably with the object of encouraging each other and of striking terror into the hearts of their foes. This method of fighting is quite opposed to their usual one, which is essentially a system of ambuscades and surprises, and in this system they excel. Small bodies of men will crouch quietly for hours in the jungle, hiding themselves with the aid of leaves and bushes, which they plant in front of them, and wait for the arrival of a convoy, into which they will fire a volley of poisoned arrows and decamp down the hill side.

The Akas do not, so far as I am aware, mutilate the slain, nor do they torture a prisoner.

When the Aka is on the war path he must, of course, have his provisions with him; these are generally carried by one of the slaves, and consist of rice (cooked), rice wine, Indian corn, &c. The cooked rice is carried in long bamboo tubes; several of these are placed in a basket and carried on the slave's back; thus one slave can carry the provisions for three men for about a week. Nearly all the inhabitants of Ramdagaon, on the south (right) bank of the Tenga River, are slaves to the Akas. Whenever Mehdi, Chundi and Co. wish to make a raid, the Ramdagaon men are ordered to send a contingent to act as coolies and fighting men.

Bridges.—These are of two kinds, *viz.*, the cane cradle suspension and the *hako*. The former, which is used when the river is very deep and rapid, is formed by one or more long and strong canes, which are stretched from bank to bank; they are attached at either end to a kind of scaffolding of bamboos, which is kept securely in position by the aid of large stones piled round it. If there is a convenient tree, one end of the cane is attached to it. Round the thick cane three or four thin cane loops are attached, and to this is fastened another cane, which is used as a pulley; the voyager seats himself in the cane loops, throws his head well back, grasps the cane above him, throws his legs over the cane, and allows himself to slide down the cane. Up to his arrival at the centre the work is easy, after that he has to haul himself up-hill, using his hands and feet, his body being supported in the small cane loops. This is a very fatiguing process, and a severe strain on the muscles. When women and children are obliged to use the cradle bridge (and all must use it in the rains), they are hauled across by means of the pulley, and in this way nearly all the stores for the advanced party were crossed over the Maj Bhoroli. A cradle basket capable of holding two maunds was constructed by one of the Survey Officers, and in this provisions and baggage were pulled across. The width of the River Maj Bhoroli where the Aka cradle bridge is constructed is about 65 yards, and the water rushes below in a regular torrent. The other description of bridge is called by the Assamese a *hako* bridge; it is somewhat like a trestle bridge; the roadway is made of bamboos, and the whole structure, which is rather infirm, is tied together by cane lashings and creepers.

The Akas trade with Bhutan to the north-west, and with the plains of Assam to the south. From Bhutan the following articles, *viz.*, clothing, warm blankets, daos, swords, and silver ornaments, are obtained, and rupees, which are got by the sale of rubber to the Kyahs in the plains, are given in exchange.

From Assam the Akas procure rupees, iron, salt, cotton, and silk goods. Rubber is the chief source of wealth of the Akas. Good rubber (*i. e.*, not rubber shells filled up with mud, a common trick of the simple savage) is worth about Rs. 60 a maund. At present the rubber supply is large; but the "feckless" way in which the Akas treat the trees will probably soon lessen their source of supply. The social status of the Aka is generally estimated by the number of mithun (semi-domesticated bison) which he is the owner of. The value of these animals averages about Rs. 90; they are used only as an article of food, and are not used for agricultural purposes, neither are they milked (the Akas, in common with all the hill tribes on the north-east frontier, look upon milk as an unclean article, and never use it). Mithun are given by a bride-

groom to the bride's father as a dowry. Mithun are killed and eaten at feasts, and sometimes they are killed as a sacrifice. Pigs and fowls are also very largely consumed by the Akas. The chief article of food is, of course, rice; millet, Indian corn, yams, Job's tears, and a large species of bean (which is very palatable, when smoked over an aromatic wood fire) supplement the rice supply. Chillies are abundant, and largely used as a condiment. Tobacco is also grown extensively.

The Akas consume a large quantity of fish, which they procure from the large rivers, the Bhoroli, the Phusung, and the Tenga. The manner in which the fishing weirs and nets are constructed is very ingenious. The system of "jhuming" (*i. e.*, clearing and burning the jungle and digging up the ground with a short hoe) obtains in the Aka as well as in all the Sub-Himalayan hills. The Akas do not, like the Angami Nagas, take the trouble to make terrace cultivation, probably owing to the precipitous nature of the hills. The water-supply, which is managed so scientificially by the Nagas, would be difficult to arrange for. The crops are biennial: rice and "makai" (Indian corn) are sown in February and reaped in June. Another sowing takes place in August, and the reaping at the end of December. The same ground is not generally cultivated more than two years running; but after an interval of ten years they return to the old ground. The Akas only cultivate as much rice as is necessary for their own consumption.

Near Mehdi's villages there are a few pines (*Pinus longifolia*), laurels, bays, and other deciduous trees. Between No. 1 Camp (or the Diju River) and Maj-Bhoroli, plantains, orchids and epiphytes of various kinds abound. Bignonias, rhododendrons, oaks, and chestnuts are found more to the north. Bamboos are rare on the left bank of the Maj Bhoroli River, though they are found in great quantity on the right bank. On the range between the Maj Bhoroli and Tenga rivers, I have noticed canes of enormous length and thickness. These are commonly used by the Akas in constructing their cradle bridges. A creeper (*Tæderia fœtida*), which is common in the Aka hills, is very useful as a tie for hutting purposes; but when it is used, the unfortunate occupant of the hut has a bad time of it, as it is the most evil smelling plant I have come across. A species of small palm with large, long leaves is found in the hills and used by the Akas for thatching purposes. Mosses and ferns are found in great quantities in the ravines which intersect the country. The rubber tree is found at the foot of the hills, and is the most valuable of all. The Aka hills are singularly destitute of animal life. Elephants (as far as the Maj Bhoroli), monkeys, deer, tigers, and leopards are found, as also are wild pigs, jungle fowl, deo-derrick, and wild pigeons.

The country of the Akas is but sparsely inhabited. The numbers are these—

Tribes.	*villages.*	*houses.*	*inhabitants.*
Kapachor Akas	6	51	510
Hazarikhowas	4	38	304
Mijis	14	580	5800
Total,	24	669	6614

I have not included the Meri-Akas in the above, as, although they are closely allied by marriage, &c., with the Kapachors, yet their interests are not so identical with the Kapachors as are those of the Mijis.

AKA VOCABULARY.

English.	Aka.	English.	Aka.
Hand ...	Grzhai.	Woman ...	Mimi.
Nose ...	Nishu.	Girl ...	Mimisa.
Eye ...	Ni.	Boy ...	Urgossa.
Leg ...	Kohzhi.	Virgin ...	Mimikiri.
Water ...	Hoo.	Married woman ...	Ziddo.
Fire ...	Mi.	Ear ...	Fu.
Earth ...	No.	Good ...	Choway.
Pipe ...	Muksumi.	Clothes ...	Gieh.
Dog ...	Sulien.	Blanket ...	Liamha.
Man ...	Nenna.	Dao ...	Vetz.
Bird ...	Phulungam.	Gun ...	Suru.
Hair ...	Kairchu.	House ...	Nieh.
Teeth ...	Tuh.	Tree ...	Shir.
Blood ...	Schee.	Cow ...	Philhoo.
Come ...	Agoway.	Mithun ...	Phu.
Go ...	Kahoway.	Pig ...	Vhoo.
None ...	Kunnio joway.	Fowl ...	Jieu.

Aka Vocabulary—*concluded.*

English.	Aka.	English.	Aka.
Sleep ...	Jumoway.	Deer ...	Kishee.
Dhan ...	Oo.	Pipe ...	Mukhsuri.
Elephant ...	Atche.	Plates ...	Gashi.
Paddy ...	Afo.	Pots ...	Guri.
Rice ...	Algi.	Stone ...	Sheo.
Indian corn ...	Sibay.	Stick ...	Di.
Ginger ...	Tikriu.	Pine tree ...	Moofoh.
Dal ...	Labunshu.	Salt ...	Roo.
Mat ...	Richu.	Pig ...	Vhoo.
Pillow ...	Dihru.	Goats ...	Kishi.
Sleep ...	Jimuay.	Brother ...	Aluay.
Cloth ...	Ghiay.	Woman ...	Mimi.
Clad ...	Battisi.	Moon ...	Hubbee.
Sepoys ...	Begla.	Water ...	Hoo.
Tobacco ...	Mukshoo.	Dog ...	Shilhouay.
Cup ...	Bálá.	Cock ...	Jio.
Tiger ...	Schi.	Eat ...	Chaday (?)
Father ...	Aoay.	Stand ...	Moloay.
Man ...	Nuni.	Give ...	Juay.
God ...	Kárza.	Far ...	Arrah.
Star ...	Neitzi.	Near ...	Arisa.
Cow ...	Phulhoo.	What ...	Há.
Cat ...	Asha.	I ...	Nau.
Go ...	Chou (?).	They ...	Noxi.
Come ...	Agouay.	Foot ...	She.
		You ...	Joxi (plural).

AKA VOCABULARY—*continued.*

English.	Aka.	Englith.	Aka.
One ...	A'.	Two ...	Xi.
Three ...	Zi.	Four ...	Phiri.
Five ...	Poom.	Six ...	Rua.
Seven ...	Mio.	Eight ...	Siggi.
Nine ...	Sthi.	Ten ...	Rh.

The words in the above vocabulary down to the word Elephant I obtained from an Aka, called Dapho, the others were given me by one of the captive Babus. I append a list of Daphla words which I took down from a Daphla in 1875, during the Daphla expedition. It will be seen that the Aka language is very different from the Daphla.

DAPHLA VOCABULARY.

English.	*Daphla.*	*English.*	*Daphla.*	*English.*	*Daphla.*
A bear ...	Sutum.	Door ...	Arap.	Foot ...	Lechu.
Deer (big) ...	Sacha.	Sword ...	Chinge.	Arm ...	Lapo.
Deer (little) ...	Sudum. Sibi.	Waistband ...	Upe.	Hand ...	Lakchum.
Porcupine ...	Sisi.	Beads ...	Tesin.	Nail ...	Lakfin.
Cat ...	Soncha.	Ear-ring ...	Rangbin.	Nose ...	Nipun.
Pig (tame) ...	Erik	Bracelet ...	Ko-je.	Knee ...	Lenbung.
Pig (wild) ...	Sarao.	Anklets ...	Lenku.	Ankle ...	Lengtu.
Mithun ...	Siba.	God ...	(N)egun.	Thigh ...	Fapo.
Goat ...	Sabin.	God (of good)	Alu.	Arm (broken)	Lagdam.
A bird ...	Pata.	God (of evil)	Karu	Skin ...	Surpin.
Tree ...	Siran.	Father ...	Abo.	Flesh ...	Surdin.

Daphla Vocabulary—*continued.*

English.	*Daphla.*	*English.*	*Daphla.*	*English.*	*Daphla.*
Hill ...	Mordi.	Mother ...	Anu.	Bone ...	Solam.
Valley ...	Morte.	Husband ...	Nagbo.	Blood. ...	Oi.
Road ...	Lamte.	Wife ...	Dongne.	Chest ...	Habo.
Earth ...	Kede.	Brother (elder)	Tete.	Breasts ...	Acho.
Water ...	Tsi.	Brother (younger).	Pai.	Hair (woman)	Dumpla.
Wood ...	Tsing.	Little girl ...	Niga.	Good ...	Alu. *
Rain ...	Yeddo.	Dead man (killed).	Mempe.	Bad ...	Karu. *
Sunshine ...	Doyne.			Big ...	Porte.
Rice ...	Aping.	Dead man (natural death).	Sido.	Little ...	Michu.
Salt ...	Alo.	Mouth ...	Agam.	Strong ...	Oiye.
Paddy ...	Um.	Ear ...	Narang.	Weak ...	Ojab.
Rice (uncooked).	Umbing.	Chin ...	Chapla.	Red ...	Lengchu.
House ...	Ugo.	Teeth ...	Api.	Black ...	Koia.
Beat out (paddy).	Changpo.	Hair (in front of head).	Padam.	Blue ...	Ye.
				Yellow ...	Minchit.
A stick for beating out	Fangi.	Hair (on top of head).	Dumi.	White ...	Pundhu.
Wine ...	Upo.	Eye. ...	Enik.	Straight ...	Dinde.
Crooked ...	Kanje.	Pretty ...	Oiye.	To kill ...	Pato.
High ...	Au.	Ugly ...	Karu.	,, fasten ...	Leto.
Low ...	Kochi.	A little ...	Michu.	,, eat ...	Do-do.
Narrow ...	Bichu.	Great deal ...	Kori.	,, sit down...	Dongto.
Broad ...	Fakta.	Lame ...	Ladak.	,, get up	Darapto. Gurapto.
Near ...	Taiyan.	Blind ...	Niglu.		
Far ...	Ado.	Deaf ...	Rangbi.	,, lie down ...	Kato.
Wet ...	Kache.	To shut ...	Chaktumto.	,, hide ...	Huso.

DAPHLA VOCABULARY—*continued.*

English.	*Daphla..*	*English.*	*Daphla.*	*English.*	*Daphla.*
Dry ...	Sindo.	To open ...	Kurko.	To run ...	Fato.
Middle ...	Bangto.	„ call ...	Sabo.	„ swim ...	Haturo.
Quickly ...	Arib.	„ give ...	Keke.	„ call ...	Gokto.
Slowly ...	Asu.	„ drink wine	Achit dedno.	„ play ...	Sonto.
Many ...	Achima.	„ look ...	Mato.	„ jump ...	Purto.
Few ...	Akin.	„ ascend.	Chato.	„ fall	Geddo. Dekto.

NUMERALS.

English.	*Daphla.*	*English.*	*Daphla.*	*English.*	*Daphla.*
One ...	Akin.	Eleven ...	Lakin.	Twenty ...	Aiyang.
Two ...	Ene.	Twelve ...	Laine.	Thirty ...	Chamang.
Three ...	Am.	Thirteen ...	Lam.	Forty ...	Chample.
Four ...	Ape.	Fourteen ...	Lape.	Fifty ...	Chango.
Five ...	Unyyo.	Fifteen ...	Lango.	Sixty ...	Chanke.
Six ...	Ake.	Sixteen ...	Lake.	Seventy ...	Kane.
Seven ...	Kanu.	Seventeen ...	Kano.	Eighty ...	Pine.
Eight ...	Penu.	Eighteen ...	Punon.	Ninety ...	Kaiya (?)
Nine ...	Kaiya.	Nineteen ...	Kaiyar.	One hundred	Trang.
Ten ...	Ailu.				

All the Daphla words are written according to the Hunterian system, and should be pronounced accordingly.

The following reply by MR. A. N. PEARSON on the remarks made upon his paper read at the last meeting, was read :—

With reference to Mr. Blanford's criticisms, I would emphasize the statement made in my paper, that it is not one isolated fact which presents itself, but several accordant ones. This is strong evidence to my mind that the data dealt with are fairly valid ; and I think there can be

little doubt that the relations pointed out by me did really exist as a physical fact during the years treated of in Mr. Hill's original paper.

With regard to Mr. Blanford's refinement of the process of smoothing, I think Mr. Hill carried the process far enough for most practical purposes, and little advantage can be gained by further refinement. When there are only few minor period oscillations to a major one, much smoothing is unnecessary; it appears to me that it is only in cases where the small period oscillations or irregularities crowd numerously into the larger period ones, and are of such amplitude as to almost completely mask the larger period ones, that it is necesary to increase the number of terms of the smoothing formula.

The PRESIDENT explained that Mr. Pearson had misunderstood what he had said at the last meeting with reference to Mr. Pearson's method of smoothing the results of meteorological observations.

LIBRARY.

The following additions have been made to the Library since the meeting held in November last.

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LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL,

ON THE 31ST DECEMBER, 1883.

LIST OF ORDINARY MEMBERS.

R. = Resident. N. R. = Non-Resident. N. S. = Non-Subscribing.
L. M. = Life Member. F. M. = Foreign Member.

N. B.—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the *Secretaries*, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Secretaries.

Members who are about to leave India and do not intend to return are particularly requested to notify to the *Secretaries* whether it is their desire to continue members of the Society; otherwise, in accordance with Rule 40 of the Bye-Laws, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1860 Dec. 5.	R.	Abdul-Latíf, Khán Bahádur, Nawab, C. I. E. *Calcutta.*
1868 Sept. 2.	N.S.	Adam, R. M., Depy. Commissioner, Salt Revenue. *Europe.*
1860 July 4.	N.R.	Ahmad Khán Bahádur, Hon. Sayyid, C. S. I. *Aligarh.*
1872 April 3.	N.R.	Ahsan-ullah, Nawáb. *Dacca.*
1860 April 4.	N.R.	Aitchison, J. E. T., M. D., Secretary to the Surgeon General, H. M.'s Forces, Bengal. *Simla.*
1878 Mar. 6.	N.S.	Allen, G. W., C. I. E. *Europe.*
1874 June 3.	R.	Amír Alí, Sayyid, Barrister-at-Law. *Calcutta.*
1882 Mar. 1.	R.	Amír Hussain, Syed, Khan Bahadur. *Calcutta.*
1865 Jan. 11.	R.	Anderson, John, M. D., F. R. S., F. L. S., Superintendent, Indian Museum. *Calcutta.*
1875 Feb. 3.	N.R.	Armstrong, J., Surgeon, Beng. Army. *Naini Tal.*
1871 Sept. 6.	R.	Atkinson, Edwin Felix Thomas, B. A., C. S., Acct.-General. *Calcutta.*
1869 Feb. 3.	N.R.	Attar Singh Bahádur, Sirdár, C. I. E., M. U. F., Chief of Bhadour. *Ludiana.*
1870 Feb. 2.	N.R.	Baden-Powell, Baden Henry, C. S., Addl. Commissioner, Rawalpindi and Lahore Divisions. *Lahore.*
1873 Aug. 6.	N.S.	Badgley, Major William Francis, S. C., Offg. Deputy Superintendent of Surveys. *Europe.*
1862 Feb. 5.	R.	Baisák Gaurdás, Deputy Magistrate. *Calcutta.*
1859 Aug. 3.	R.	Balaichand Siñha. *Calcutta.*
1865 Nov. 7.	N.S.	Ball, Valentine, M. A., F. R. S., F. G. S. *Europe.*

Date of Election.		
1860 Nov. 1.	R.	Banerjea, Rev. Kristo Mohun, LL. D. *Calcutta.*
1862 Aug.31.	R.	Barclay, Arthur, M. B., Surgeon, Bengal Medical Service. *Calcutta.*
1869 Dec. 1.	L.M.	Barker, R. A., M. D., Civil Surgeon. *Nya Dumka, Santhal Pergunnahs.*
1879 Aug.28.	N.R.	Barkley, D. G., M. A., C. S. *Lahore.*
1881 Aug. 3.	N.R.	Barstow, Henry Clements, C. S., Magistrate and Collector. *Cawnpore.*
1859 May 4.	L.M.	Bayley, The Hon'ble Sir Edward Clive, B. C. S., K. C. S. I., C. I. E. *Europe.*
1878 June 5.	R.	Bayley, C. S., C. S., Offg. Under-Secretary to the Govt. of Bengal. *Calcutta.*
1873 Feb. 5.	R.	Bayne, R. R., M. E. I. B. A., Draughtsman, Chief Engineer's Office, E. I. Railway. *Calcutta.*
1864 Sept. 7.	N.R.	Beames, John, B. C. S., Offg. Commissioner, Burdwan Division. *Chinsurah.*
1878 Sept.25.	N.R.	Beighton, T. D., C. S., Offg. Judge. *Burdwan.*
1881 Mar. 2.	N.R.	Benett, W. C. *Cawnpore.*
1862 Oct. 8.	N.S.	Bernard, Charles Edward, C. S. *Europe.*
1872 Aug. 7.	R.	Beverley, The Hon. Henry, M. A., C. S. *Calcutta.*
1876 Nov.15.	N.S.	Beveridge, Henry, C. S., District and Sessions Judge. *Europe.*
1878 Oct. 4.	R.	Bhakta, Krishna Gopal. *Calcutta.*
1879 Mar. 5.	N.R.	Biddulph, Major J., B. S. C. *Sirdarpur, C. I.*
1875 July 7.	N.R.	Black, F. C., Archæological Engineer. *Bellary, Madras Presy.*
1857 Mar. 4.	L.M.	Blanford, H. F., A. E. S. M., F. R. S., F. G. S., Meteorological Reporter, Govt. of India. *Calcutta.*
1873 April 2.	N.R.	Blisset, T., Superintendent, Telegraph Stores. *Bombay.*
1879 Aug.28.	R.	Blyth, W. D., M. A., LL. D., C. S., Under-Secretary to the Govt. of Bengal. *Calcutta.*
1880 Nov. 3.	N.R.	Bose, Pramatha Nath, B. SC., F. G. S., Geological Survey of India. *Kawarda, Bilaspur, C. P.*
1877 May 2.	N.S.	Bourdillon, James Austin, C. S., Inspector-General of Registration. *Europe.*
1876 Nov.15.	N.R.	Bowie, Major M. M. *Nagpur.*
1868 Jan. 15.	N.R.	Boxwell, John, C. S. *Gaya.*
1883 Feb. 7.	R.	Brace, Lewis Jones K., Curator of the Herbarium, Royal Botanic Garden. *Sibpur.*
1876 May 4.	N.R.	Bradshaw, Brigade-Surgeon A. F., A. M. D. *Quetta.*
1860 Mar. 7.	L.M.	Brandis, Dietrich, PH. D., F. L. S., F. R. S. *Europe.*
1879 Jan. 8.	R.	Browne, J. F., C. S., M. R. A. S., Offg. District and Sessions Judge, 24-Pergunnahs. *Calcutta.*
1879 April 2.	R.	Calcutta, The Rt. Rev. the Lord Bishop of. *Calcutta.*
1869 Jan. 20.	N.R.	Cadell, Alan, B. A., C. S., Magistrate. *Mirzapore.*

Date of Election.		
1873 Mar. 5.	R.	Cappel, A. J. L., Offg. Director General of Telegraphs. *Calcutta.*
1880 Mar. 3.	N.R.	Carlleyle. A. C., Archæological Survey of India. *Allahabad.*
1881 Feb. 2.	N.R.	Carter, Philip John, Depy. Conservator of Forests. *Rangoon.*
1876 Nov. 15.	R.	Cayley, Surgeon-Major H., Surgeon, Mayo Native Hospital. *Calcutta.*
1882 May 3.	N.R.	Chalmers, James B., C. E. *Dinapore.*
1881 Mar. 2.	N.R.	Channing, Francis Chorley, B. C. S. *Lahore.*
1883 Aug. 30.	R.	Chatterji, Dr. Aghorenath. *Calcutta.*
1881 Mar. 2.	N.R.	Chatterji, Bhairab Chunder. *Jessore.*
1880 May 5.	N.R.	Chatterji, Tara Prasada. *Bishnupur, Zila Bankura.*
1880 Jan. 7.	R.	Chaudhuri, Govinda Kumara. *Calcutta.*
1861 Mar. 1.	N.R.	Chaudhuri, Harachandra, Zamindar. *Sherpur, Maimansingh.*
1880 Nov. 3.	N.R.	Chaudhuri, Khirode Chandra Roy. *Berhampur College.*
1874 Aug. 5.	N.R.	Chennell, A. W., Asst. Surveyor, Survey Department. *Shillong.*
1877 Aug. 30.	N.S.	Clarke, Major Henry Wilberforce, R. E. *Europe.*
1880 Aug. 26.	N.R.	Clerk, Lieut.-Colonel Malcolm G., Commandant of the Fort. *Chunar, N. W. P.*
1881 May 4.	N.R.	Cockburn, John, Asst. Sub-Depy. Opium Agent. *Chunar.*
1874 Nov. 4.	F.M.	Constable, Archibald, Resident Engineer and Personal Asst. to Chief Engineer, Oudh and Rohilkund Railway. *Europe.*
1881 Mar. 2.	N.R.	Cook, Capt. L. A. C. *Jamrud.*
1876 Mar. 1.	N.R.	Crawfurd, James, B. A., C. S., Barrister-at-Law, Offg. District and Sessions Judge. *Maimansingh.*
1877 June 6.	R.	Croft, A. W., M. A., Director of Public Instruction. *Calcutta.*
1874 Mar. 4.	N.S.	Crombie, Alexander, M. D., Civil Surgeon. *Europe.*
1883 April 4.	N.R.	Crosthwaite, Hon. C. H. T., C. S. Offg. Chief Commissioner, British Burmah. *Rangoon.*
1873 Aug. 6.	N.S.	Cunningham, David Douglas, M. D., Professor, Medical College. *Europe.*
1873 Dec. 3.	N.R.	Dames, Mansel Longworth, C. S., Asst. Commissioner. *Dera Ismail Khan.*
1877 7une 6.	N.R.	Darbhanga, Mahárájá of. *Darbhanga.*
1865 June 7.	N.R.	Dás, Rájá Jaykishan, Bahádur, C. S. I. *Bijnor.*
1879 April 7.	N.R.	Dás, Rám Saran, M. A., Secy. Oudh Commercial Bank, Limited. *Fyzabad, Oudh.*
1869 April 7.	F.M.	Day, Dr. Francis, F. L. S., F. Z. S. *Europe.*
1859 Oct. 6.	N.R.	Delmerick, J. G., Extra Asst. Commissioner. *Ambala City.*
1862 May 7.	N.R.	Dhanapati Singh Dughar, Raí Bahádur. *Azimganj.*
1880 Dec. 1.	N.R.	Dilawar Hasein Ahmad, Maulawí. *Jamui, Monghyr.*

Date of Election.		
1877 July 4.	R.	Diler Jang, Nawáb Syad Ashgar Alí, Khan Bahádur, C. S. I. *Calcutta.*
1875 Mar. 3.	R.	Douglas, J. C., Supdt. of Telegraph Stores. *Alipore.*
1882 Mar. 1.	N.R.	Douie, J. M., C. S., Settlement Officer. *Karnal, Panjab.*
1879 Feb. 5.	N.R.	Duthie, J. F., Superintendent, Govt. Botanical Gardens. *Saharunpore.*
1877 Aug.30.	N.R.	Dutt, Kedarnath, Depy. Magte. *Satkhira.*
1873 April 2.	R.	Dutt, Omesh Chunder. *Calcutta.*
1881 Mar. 2.	F.M.	Eden, The Hon'ble Sir Ashley, K. C. S. I., C. I. E. *Europe.*
1870 Mar. 8.	L.M.	Edinburgh, H. R. H. The Duke of. *Europe.*
1863 May 6.	R.	Edgar, John Ware, C. S., C. S. I. *Calcutta.*
1879 Mar. 5.	N.R.	Eetvelde, E. van, Consul-General for Belgium. *Bombay.*
1874 Dec. 2.	N.S.	Egerton, The Hon. Sir Robert Eyles, C. S., K. C. S. I., C. I. E. *Europe.*
1871 Dec. 2.	R.	Eliot, J., M. A., Meteorological Reporter to the Govt. of Bengal. *Calcutta.*
1859 Dec. 7.	R.	Fath Alí, Maulawí. *Calcutta.*
1863 Jan. 15.	R.	Fedden, Francis, Asst., Geological Survey of India. *Calcutta.*
1876 Jan. 5.	F.M.	Feistmantel, Ottokar, M. D., Palæontologist, Geological Survey of India. *Europe.*
1880 April 7.	N.R.	Fiddian, W., M. A., C. S., Offg. Magistrate and Collector. *Birbhúm.*
1879 July 2.	N.R.	Finucane, M., C. S., Magistrate and Collector. *Darbhanga.*
1869 Sept. 1.	N.S.	Fisher, John Hadden, C. S. *Europe.*
1872 Dec. 4.	N.R.	Forbes, Lieut.-Col. John Greenlaw, R. E. *Allahabad.*
1876 July 5.	N.R.	Foulkes, The Rev. Thos., F. L. S., M. R. A. S., F. R. G. S., Chaplain. *Salem, Madras Presy.*
1869 Sept. 1.	N.R.	Fryer, Colonel, G. E., M. S. C. Deputy Commissioner. *Thayetmyo, B. Burmah.*
1880 April 7.	N.R.	Gajapati, Ananda Ram, Raja of Vizianagram. *Vizianagram.*
1873 Dec. 3.	N.R.	Gamble, J. S., M. A., Conservator of Forests, Northern Circle. *Madras.*
1883. Aug. 1.	N.R.	Garga, Kumar Isvanprasad, Zemindar. *Maisádal.*
1859 Aug. 3.	L.M.	Gastrell, Major-General James Eardley (retired). *Europe.*
1867 Dec. 4.	N.R.	Gay, E., M. A., C. S., Accountant-General. *Bombay.*
1883 Aug.30.	R.	Ghose, Manomohan. *Calcutta.*
1871 May 3.	R.	Ghosha, Káliprasanna. *Calcutta.*
1869 Feb. 3.	R.	Ghosha, Pratápchandra, B. A. *Calcutta.*

Date of Election.		
1870 May 4.	R.	Ghoshál, Rájá Satyánand. *Calcutta.*
1880 Aug. 4.	R.	Gibbs, The Hon. James, C. S. I., C. I. E., F. R. G. S., M. R. A. S., Member of the Governor-General's Council. *Calcutta.*
1875 July 7.	N.R.	Girdlestone, Charles Edward Ridgway, C. S., Resident. *Katmandu, Nepal.*
1861 Feb. 5.	F.M.	Godwin-Austen, Lieut.-Colonel H. H., F. R. S., F. Z. S., F. R. G. S. *Europe.*
1882 May 3.	R.	Golam Sarwar, Maulawí. *Calcutta.*
1862 July 2.	N.S.	Gordon, Robert, C. E., Executive Engineer, P. W. D. *Europe.*
1881 Mar. 2.	R.	Gosain, Hem Chunder. *Calcutta.*
1863 Nov. 4.	F.M.	Gowan, Major-General J. Y. *Europe.*
1879 Jan. 8.	N.R.	Gowan, Major W. E. *Simla.*
1877 Nov. 7.	L.M.	Grant, Alexander, M. I. C. E., Director of State Railways. *Europe.*
1876 Nov. 15.	N.R.	Grierson, George Abraham, C. S. *Patna.*
1861 Sept. 4.	N.S.	Griffin, Sir Lepel Henry, C. S., K. C. S. I. *Europe.*
1861 Feb. 6.	N.R.	Growse, Frederick Salmon, M. A., C. S., C. I. E., Magistrate and Collector. *Bulandshahr, N. W. P.*
1880 Feb. 4.	R.	Gupta, Behárilál, C. S. *Calcutta.*
1883 June 6.	N.R.	Gurdyál Singh, Sirdár, C. S., Asst. Commissioner. *Hoshiarpur, Panjab.*
1867 July 3.	N.S.	Hacket, Charles Augustus, Assistant, Geol. Survey of India. *Europe.*
1883 Jan. 3.	N.R.	Harding, Francis Henry, B. A., C. S. *Tajpur, Tirhut.*
1879 Mar. 5.	R.	Harraden, S. *Calcutta.*
1877 Sept. 27.	R.	Hart, J., Attorney-at-law. *Calcutta.*
1875 Mar. 3.	N.S.	Hendley, Surgeon Major Thomas Holbein. *Europe.*
1879 Mar. 5.	N.S.	Herschel, Major J., R. E., F. R. S., Survey of India. *Europe.*
1875 Aug. 4.	N.R.	Hewitt, James Francis Katherinus, C. S., Commissioner. *Chota Nagpur.*
1883 May 2.	F.M.	Hill, Samuel Alexander, B. SC., A. R. S. M., F. C. S., Prof. of Physical Science, Muir College and Meteor. Reporter to Govt., N.-W. P. and Oudh. *Europe.*
1872 Dec. 4.	R.	Hoernle, Rev. A. F. R., PH. D., Principal of the Madrasah. *Calcutta.*
1878 Mar. 6.	N.R.	Hoey, W. *Lucknow.*
1873 Jan. 8.	L.M.	Houstoun, G. L., F. G. S. *Europe.*
1863 Jan. 15.	N.R.	Howell, Mortimer Sloper, C. S. *Mirzapur, N.-W. P.*
1878 Sept. 25.	N.R.	Hughes, G., C. S. *Rupar, Amballa.*
1867 Aug. 7.	N.R.	Hughes, T. H., A. R. S. M., F. G. S., Geol. Survey of India. *Kutni., E. I. R.*
1866 Jan. 17.	N.S.	Hughes, Major W. G., M. S. C. *Europe.*
1870 Jan. 5.	N.R.	Hume, Allan Octavian, C. B., C. S. *Allahabad.*

Date of Election.		
1872 Dec. 4.	N.R.	Ibbetson, Denzil Charles Jelf, C. S. *Lahore.*
1866 Mar. 7.	N.R.	Irvine, William, C. S., Magistrate and Collector. *Ghazipur.*
1853 Dec. 7.	N.R.	Isvariprasad Singh, Maharaja, G. C. S. I. *Benares.*
1874 Feb. 4.	R.	Jackson, Surgeon Major Charles Julian J. *Calcutta.*
1878 May 2.	N.S.	Jackson, Sir L. S. *Europe.*
1880 Dec. 1.	N.S.	Jackson, William Grierson, B. C. S. *Europe.*
1869 Aug. 4.	R.	Jahán Qadr Muhammad Wáhid Alí, Bahádur, Prince. *Garden Reach, Calcutta.*
1876 July 5.	N.S.	Jarrad, Lieut. F. W., R. N., F. R. A. S., Marine Survey Dept. *Europe.*
1879 Mar. 5.	R.	Jarrett, Lt.-Col. H. S., B. S. C., Secy. to the Board of Examiners. *Calcutta.*
1881 Feb. 2.	N.R.	Jenkins, Capt. Thomas Morris, M. S. C., Asst. Commissioner and J. P. for Burmah. *Bassein.*
1862 Mar. 5.	N.R.	Johnstone, Lieut.-Colonel James William Hope, Commissioner. *Jallandhar.*
1867 Dec. 4.	N.S.	Johnstone, Lieut.-Col. James, Political Agent. *Europe.*
1878 Aug. 7.	N.R.	Johnstone, P. DeLacy, C. S.
1873 Dec. 3.	N.R.	Johore, H. H. the Mahárájá of, K. C. S. I. *New Johore, Singapore.*
1873 April 2.	N.S.	Jones Frederick, C. S., Magte. and Collr. *Europe.*
1875 Nov. 3.	N.R.	Jones, Samuel Simpson, B. A., C. S., Asst. Commissioner, Deoghur Division. *Santhal Pergunnahs.*
1869 April 7.	R.	Kabíruddín Ahmad, Maulawí. *Calcutta.*
1882 Mar. 1.	R.	Kennedy, Pringle, M. A. *Calcutta.*
1874 Dec. 2.	N.R.	Khudábaksh, Khan Bahadur, Maulawí. *Patna.*
1867 Dec. 4.	R.	King, G., M. B., F. L. S., Supdt., Royal Botanic Garden. *Sibpur.*
1881 Mar. 2.	N.R.	King, Lucas White, B. A., LL. B., C. S. *Peshawar.*
1862 Jan. 15.	N.R.	King, W., Jr., B. A., F. G. S., Depy. Supdt. for Madras, Geol. Survey of India. *Kutni. E. I. R.*
1880 Dec. 1.	N.S.	Kirton, Surgeon-Major William Henry, F. L. S., Medical Store-Keeper. *Europe.*
1880 Jan. 7.	N.R.	Kisch, H. M., M. A., C. S. *Calcutta.*
1877 Jan. 17.	N.R.	Kishor, Kumara Radha Dev, Juvráj of Hill Tipperah. *Tipperah.*
1882 June 7.	N.R.	Kishore Singh, Maharaja Kumar Harendra. *Bettiah.*
1883 Aug.30.	N.R.	Kuster, E. E. A. *Darbhanga.*
1878 Oct. 4.	N.R.	Lachman Singh, Raja. *Bulandshahr.*
1877 Sep. 27.	N.R.	La Touche, James John Digges, B. A., C. S. *Banda.*
1881 Feb. 2.	R.S.	Laughlin, Robert Campbell, Asst. Supdt., Govt. Telegraph Department. *Europe.*
1882 Dec. 6.	N.R.	Lawrence, Walter. *Abu, Rajputana.*

Date of Election.		
1881 Mar. 2.	N.R.	Lee, J. Bridges, M. A., F. G S., F. C. S., F. Z. S., Barrister-at-Law. *Lahore.*
1879 Dec. 3.	N.R.	Leonard, G. S., Asst. Traffic Supdt., N. B. State Ry. *Saidpur.*
1879 Mar. 5.	R.	Levinge, H. C., C. E., Offg. Secy. to the Govt. of Bengal, P. W. D. *Calcutta.*
1880 July 7.	N.R.	Lewis, Rev. Arthur. B. A. *Dera Ghazi Khan.*
1873 Feb. 5.	N.S.	Lewis, Timothy Richards, M. B., Special Asst. to the Sanitary Commissioner with the Government of India. *Europe.*
1881 Dec. 7.	N.S.	Logan, R., C. S. *Europe.*
1866 Jan. 17.	F.M.	Low, James, Surveyor, G. T. Survey (retired). *Europe.*
1869 July 7.	N.R.	Lyall, Charles James, B. A., C. S. *Shillong.*
1870 April 7.	L.M.	Lyman, B. Smith. *Northampton, Mass., U. S., America.*
1880 Dec. 1.	R.	M'Cann, H. W., M. A., D. SC., Professor, Presidency College. *Calcutta.*
1868 Dec. 2.	N.R.	Macauliffe, Michael, B. A., C. S., Judicial Asst. *Gujrat, Panjab.*
1880 June 2.	F.M.	Macdonald, James, C. E. *Europe.*
1879 Feb. 5.	N.R.	Macgregor, Major C. R., F. R. G. S., 44th N. I. *Kohima, Naga Hills, Assam.*
1848 April 5.	L.M.	Maclagan, Major-General Robert, R. E., F. R. S. E., F. R. G. S. *Europe.*
1873 Dec. 3.	R.	MacLeod, Surgeon-Major Kenneth, M. D. *Calcutta.*
1880 May 5.	N.R.	MacLeod, Roderick Henry, B. C. S., Asst. Magistrate. *Kasia, Gorakhpur, N.-W. P.*
1881 July 6.	R.	Mahomed Firukh Shah, Prince. *Calcutta.*
1882 Aug. 2.	R.	Mahomed Yusoof, Hon. Moulvie. *Calcutta.*
1867 April 3.	R.	Mainwaring, Major-General George Byres, S. C. *Serampur.*
1878 April 3.	R.	Mallet, F. R., Geological Survey of India. *Calcutta.*
1864 July 6.	R.	Mallik, Coomar Devendra. *Calcutta.*
1869 Sept. 1.	R.	Mallik, Yadulál. *Calcutta.*
1872 Nov. 6.	N.R.	Man, E. H., Asst. Supdt. *Nancowry, Nicobars.*
1880 May. 5.	N.R.	Mandalik, The Hon. Rao Sahib Visvanath Narayana, C. S. I. *Bombay.*
1869 July. 7.	N.R.	Markham, Alexander Macaulay, C. S., F. R. G. S., Collector. *Banda.*
1873 July. 2.	N.R.	Marshall, C. W. *Gonatra, Synthea, Bengal.*
1877 Feb. 7.	N.S.	Marshall, Major Geo. Fred. Lycester, R. E., Asst. Secy., Govt. of India, P. W. D. *Europe.*
1860 Mar. 7.	R.	Medlicott, H. B., M. A., F. R. S., F. G. S., Supdt., Geological Survey of India. *Calcutta.*
1877 Mar. 7.	N.R.	Medlycott, The Rev. Adolphus Edwin, PH. D., Military Chaplain. *Ferozepur, Panjab.*
1882 Dec. 6.	N.R.	Merk, W. R. H., C. S. *Lahore.*

Date of Election.		
1871 Sept. 6.	F.M.	Miles, Lieut.-Colonel S. B., S. C., Political Agent. *Muscat.*
1870 July 6.	R.	Miller, A. B., B. A., Barrister-at-law, Official Assignee. *Calcutta.*
1874 May 6.	N.R.	Minchin, F. J. V. *Aska, Ganjan.*
1875 Aug. 4.	N.R.	Minchin, Colonel C. C. *Hissar, Panjab.*
1856 Mar. 5.	R.	Mitra, Rájendralála, Rái Bahádur, LL. D., C. I. E. *Calcutta.*
1876 Dec. 6.	F.M.	Mockler, Major E., British Consul. *Basrah, Persian Gulf.*
1881 May 4.	N.R.	Molloy, Major Edward, 5th Goorkhas. *Abbotabad, Hazara, Panjab.*
1881 Dec. 7.	N.R.	Monteath, J. J., M. D. *Silchar.*
1878 May 2.	N.R.	Moyle, J. C., Barrister-at-law. *Moulmein, Burmah.*
1864 Nov. 2.	N.R.	Mukerjea, Bhudeva, C. I. E. *Chinsurah.*
1879 May 7.	F.M.	Muir, J. W., M. A., C. S., Barrister-at-law. *Europe.*
1883 May 2.	R.	Mukarji, Rajkrishna, M. A., B. L., Bengali translator to Govt. *Calcutta.*
1867 Mar. 6.	R.	Mukerjea, The Hon. Pearimohan, M. A. *Uttarpara.*
1882 Jan. 4.	R.	Mukerji, Girijabhushan, M. A. *Calcutta.*
1880 Aug.26.	R.	Mullick, Benod Behari. *Calcutta.*
1880 Aug.26.	N.R.	Nag, Sib Chunder. *Bakarganj.*
1880 Dec. 1.	R	Napier, J. R. *Calcutta.*
1882 Aug. 2.	N.R.	Narain Singh, Raja Ram. *Khyrah, Monghyr.*
1876 May 4.	R.	Nash, A. M., M. A., Professor, Presidency College. *Calcutta.*
1881 Nov. 2.	R.	Nicéville, L. de. *Calcutta.*
1869 July 7.	N.R.	Nursing Rao, A. V. *Vizagapatam.*
1871 July 5.	N.S.	Oates, E. W., C. E., Engineer, P. W. D., Garrison Div., Sittang Canal. *Europe.*
1874 Oct. 4.	R.	O'Kinealy, The Hon'ble James, C. S., Judge of the High Court. *Calcutta.*
1879 Aug.28.	N.	Oldham, Surgeon-Major C. F., F. R. G. S. *Europe.*
1880 Dec. 1.	N.R.	Oldham, R. D., A. R. S. M., Asst., Geological Survey of India. *Saharunpore.*
1883 Aug.30.	N.R.	Oliver, Edw. Emmerson, M. I. C. E., Asst. Secy. to Govt. Panjab, P. W. D. *Lahore.*
1873 Aug. 6.	R.	Olpherts, W. G., C. E., E. I. Railway. *Howrah.*
1880 Aug. 4.	L.M.	Pandia, Pandit Mohanlall Vishnulall, F. T. S., Member and Secy., Royal Council of Meywar. *Oodeypur.*
1880 Jan. 7.	R.	Pargiter, Frederick E., B. A., C. S., Officiating Commissioner of the Sunderbands. *Calcutta.*
1873 Aug. 6.	R.	Parker, J. C. *Calcutta.*
1880 Jan. 7.	N.R.	Parry, J. W., C. E., ASSOC. M. I. C. E., Asst. Engineer. *Nundial, viâ Cuddapah, Madras.*

Date of Election		
1862 May 7.	L.M.	Partridge, Surgeon-Major Samuel Bowen, M. D. *Europe.*
1879 Mar. 5.	N.S.	Pawsey, R., C. S., Collector. *Europe.*
1871 Dec. 6.	N.R.	Peal, S. E. *Sibsagar, Asam.*
1860 Feb. 1.	F.M.	Pearse, Major-General G. G., C. B., R. H. A. *Europe.*
1873 Aug. 6.	R.	Pedler, Alexander, F. C. S., Professor of Chemistry, Presidency College. *Calcutta.*
1864 Mar. 2.	N.S.	Pellew, Fleetwood Hugo, C. S., Offg. Commissioner. *Europe.*
1865 Sept. 6.	N.R.	Peppé, T. F. *Arrah.*
1881 Aug.25.	R.	Percival, Hugh Melville, M. A., Professor, Presidency College. *Calcutta.*
1883 Jan. 3.	N.R.	Plowden, Major Trevor C. *Simla.*
1877 Aug. 1.	N.R.	Peters, C. T., M. B., Surgeon-Major. *Bombay.*
1868 May 6.	R.	Peterson, F. W., F. C. S., H. M.'s Mint. *Calcutta.*
1835 July 1.	N.S.	Phayre, Sir Arthur Purves, K. C. S. I., C. B. *Europe.*
1883 Aug.30.	N.R.	Pope, Richard Rodney, C. S. *Nilphamari, N. B. S. R.*
1872 Dec. 4.	R.	Prânnâth Sarasvati, Pandit, M. A., B. L. *Bhowanipur.*
1880 June 2.	N.R.	Prasad Sinh, Thakur Garuradhawaya, Raja of Beswan. *Beswan Fort, Aligarh.*
1877 Aug.30.	N.R.	Pratapnararyan Singha, Depy. Magistrate. *Bankura.*
1881 Feb. 2.	R.	Prideaux, Major William Francis, B. S. C. *Calcutta.*
1878 Feb. 6.	N.S.	Prinsep, The Hon'ble H. T., Judge of the High Court. *Calcutta.*
1871 June 7.	R.	Ramkrishna. *Calcutta.*
1877 May 2.	N.S.	Ravenshaw, Thomas Edw., C. S. *Europe.*
1880 April 7.	R.	Rai, Bipina Chandra, B. L. *Calcutta.*
1877 Aug. 1.	N.R.	Rees, J. C., Asst. Engr., P. W. D. *Thonzai, British Burmah.*
1871 July 5.	N.R.	Reid, James Robert, C. S., Collector. *Bareilly, Rohilcund.*
1881 Mar. 2.	R.	Reynolds, The Hon. Herbert John, B. A., C. S. *Calcutta.*
1880 Aug. 4.	N.R.	Reynolds, Herbert William Ward, C. S. *Allahabad.*
1860 Jan. 3.	N.R.	Rivett-Carnac, John Henry, C. S., C. I. E., F. S. A., Opium Agent. *Ghazipur.*
1863 April 1.	F.M.	Robertson, Charles, C. S., Secretary to the Govt., N.-W. P. and Oudh. *Europe.*
1878 Sept. 25.	R.	Robertson, Rev. J. *Calcutta.*
1865 Feb. 1.	N.S.	Robinson, S. H. *Europe.*
1881 Aug.30.	R.	Roy, Nanda Kumar. *Calcutta.*
1880 Sept.30.	N.R.	Sage, E. M., Asst. Engineer, P. W. D. *Tavoy, British Burmah.*
1877 May 2.	N.R.	Sandford, W., Rajputana-Malwa Railway. *Ajmere, Rajputana.*
1870 May 4.	R.	Schlich, Dr. W. *Calcutta.*
1879 Feb. 5.	R.	Sconce, Lt.-Col. J., B. S. C. *Calcutta.*
1874 July 1.	N.R.	Scully, Dr. John. *H. M.'s Mint, Bombay.*

Date of Election.		
1878 Mar. 6.	R.	Sen, Adharlal, B. A. *Calcutta.*
1874 Dec. 2.	N.R.	Sen, Dr. Rám Dás. *Berhampur.*
1882 June 7.	F.M.	Senart, Emile, Membre de l'Institut de France. *Paris.*
1882 Aug. 2.	R.	Serajul Islam, Moulvie. *Calcutta.*
1879 Jan. 8.	N.R.	Sewell, R., M. C. S. *Madras.*
1878 May 2.	R.	Sharpe, C. J. *Calcutta.*
1879 May 7.	N.S.	Sheridan, C. J., C. E. *Europe.*
1881 Mar. 2.	N.R.	Shopland, E. R., Indian Marine, Port Officer. *Akyab.*
1882 May 3.	N.R.	Shyamaldass, Kavirája, Private Secy. to H. H. the Mahárána of Udaipur. *Udaipur.*
1878 April 3.	R.	Simson, A. *Calcutta.*
1867 April 3.	R.	Sirkár, Dr. Mahendralála. *Calcutta.*
1872 Aug. 7.	N.S.	Skrefsrud, Rev. L. O., India Home Mission to the Santháls. *Europe.*
1864 Sept. 7.	N.R.	Sladen, Col. E. B., M. S. C. *Akyab.*
1874 June 3.	N.R.	Smith, Vincent Arthur, C. S., Settlement Officer. *Basti, N.-W. P.*
1879 Mar. 5.	R.	Someren, Major G. J. van., *Calcutta.*
1872 July 3.	N.R.	Stephen, Carr, B. L., Judl. Asst. Commr. *Ludianah.*
1879 Oct. 2.	N.S.	Sterndale, R. A., F. R. G. S., Asst. Comr. of Currency. *Europe.*
1882 May 3.	R.	Stewart, H. E. Sir Donald M., Bart., G. C. B., G. C. S. I., Commander-in-Chief. *Calcutta.*
1878 July 3.	N.R.	St. Barbe, H. L., C. S. *Bassein, British Burmah.*
1876 Aug. 2.	N.R.	St. John, Lieut.-Col. Sir Oliver Beauchamp, R. E., K. C. S. I., Officer on special duty. *Kashmir.*
1869 Feb. 3.	N.S.	Strachey, Sir J., K. C. S. I., C. I. E. *Europe.*
1880 Nov. 3.	F.M.	Sturt, Lieut. Robert Ramsay Napier, B. S. C., Panjab Frontier Force. *Europe.*
1864 Aug.11.	R.	Swinhoe, W., Attorney-at-Law. *Calcutta.*
1880 Nov. 3.	N.R.	Swynnerton, Rev. Charles. *Naushera.*
1880 June 2.	N.S.	Sykes, John Gastrell, LL. B., Barrister-at-Law and Advocate, High Court, N. W. P. *Europe.*
1868 June 3.	R.	Tagore, The Hon'ble Mahárájá Jotendra Mohun, K. C. S. I. *Calcutta.*
1865 Sept. 6.	N.S.	Tawney, C. H., M. A., Principal, Presidency College. *Europe.*
1874 Mar. 4.	N.S.	Taylor, Commander A. D., late Indian Navy. *Europe.*
1860 May 2.	N.S.	Temple, Sir R., Bart., K. C. S I., C. I. E., B. C. S. *Europe.*
1878 June 5.	N.R.	Temple, Capt. R. C., S. C. *Ambala.*
1876 Feb. 2.	R.	Tennant, Major-General James Francis, R. E., F. R. S., C. I. E., Mint Master. *Calcutta.*
1875 June 2.	N.R.	Thibaut, Dr. G., Professor, Sanskrit College. *Benares.*
1869 Oct. 6.	N.R.	Thomson, A., The College. *Agra.*

Date of Election.		
1875 Nov. 3.	N.R.	Thomson, Robert George, C. S., Asst. Comr. *Jhelum, Panjab.*
1847 June 2.	L.M.	Thullier, Major-Genl. Sir Henry Edward Landor, R. A., C. S. I., F. R. S. *Europe.*
1883 June 6.	R.	Toker, Lieut.-Col. Alliston Champion, B. S. C., Offg. Asst. Secy., Govt. of India, Military Dept. *Calcutta.*
1871 April 5.	F.M.	Trefftz, Oscar. *Europe.*
1861 June 5.	L.M.	Tremlett, James Dyer, M. A., C. S. Commissioner. *Delhi.*
1872 July 3.	R.	Trevor, Colonel William Spottiswoode, R. E., With the Supreme Govt. *Calcutta.*
1880 Mar. 3.	F.M.	Tufnell, Lieut. R. H. C., 30th M. N. I. *Europe.*
1863 May 6.	N.R.	Tyler, J. W., M. D., F. R. C. S., Supdt., Central Prison. *Agra.*
1865 Nov. 1.	R.	Waldie, David, F. C. S. *Calcutta.*
1861 May 1.	N.S.	Walker, Lieut.-Genl. James T., R. E., C. B., F. R. S., Surveyor General of India. *Europe.*
1865 May 3.	R.	Waterhouse, Major James, B. S. C., Dy. Supdt., Survey of India. *Calcutta.*
1874 July 1.	R.	Watt, Dr. George. *Calcutta.*
1876 Dec. 6.	R.	Webb, W. T., M. A., Professor, Presidency College. *Calcutta.*
1879 Mar. 5.	N.R.	Weekes, A., C. S., Magistrate and Collector. *Purneah.*
1869 Sept. 1.	R.	Westland, James, C. S., Offg. Comptroller-General. *Calcutta.*
1867 Feb. 6.	R.	Westmacott, Edward Vesey, B. A., C. S. *Calcutta.*
1875 Feb. 3.	N.R.	Whiteway, Richard Stephen, C. S., Settlement Officer. *Ajmere and Merwara.*
1878 Aug.29.	N.S.	Whittall, R., Forest Dept. *Europe.*
1873 May 7.	N.R.	Williams, George Robert Carlisle, B. A., C. S., Depy. Commissioner. *Jhansi.*
1880 Feb. 4.	N.S.	Wilson, The Hon. Arthur. *Europe.*
1870 Aug. 3.	N.R.	Wilson, Robert Henry, B. A., C. S., Magte. and Collector. *Midnapur.*
1878 Mar. 6.	N.R.	Wilson, J., C. S. *Gurgaon, Punjab.*
1866 Mar. 7.	L.M.	Wise, Dr. J. E. N. *Rostellan, County Cork, Ireland.*
1870 Jan. 5.	N.S.	Wood-Mason, James. *Europe.*
1873 Aug. 6.	N.R.	Woodthorpe, Lieut.-Col. Robert Gossett, R. E., Asst. Supdt., Survey of India. *Camp viâ Dibrugarh, Upper Assam.*

HONORARY MEMBERS.

Date of Election.	
1847 Nov. 3.	His Highness the Nawáb Nazim of Bengal. *Europe.*
1848 Feb. 2.	Sir J. D. Hooker, K. C. S. I., C. B., M. D., D. C. L., F. R. S., F. G. S. *Kew.*
1853 April 6.	Major-General H. C. Rawlinson, K. C. B., D. C. L., F. R. S. *London.*
1858 July 6.	B. H. Hodgson. *Europe.*
1860 Mar. 7.	Professor Max Müller. *Oxford.*
1860 Nov. 7.	Edward Thomas, F. R. S. *London.*
1860 Nov. 7.	Dr. Aloys Sprenger. *Heidelberg.*
1860 Nov. 7.	Dr. Albrecht Weber. *Berlin.*
1868 Feb. 5.	General A. Cunningham, C. S. I. *India.*
1868 Feb. 5.	Professor Bápu Deva Sástri. *Benares.*
1868 Sept. 2.	A. Grote. *London.*
1872 May 1.	Sir G. B. Airy, K. C. B., M. A., D. C. L., LL. D., F. R. S. *London.*
1872 June 5.	Prof. T. H. Huxley, LL. D., PH. D., F. R. S., F. G. S., F. Z. S., F. L. S. *London.*
1875 Nov. 3.	Dr. O. Böhtlingk. *Jena.*
1875 Nov. 3.	Prof. J. O. Westwood. *Oxford.*
1876 April 5.	Col. H. Yule, R. E., C. B. *London.*
1876 April 5.	Dr. Werner Siemens. *Berlin.*
1879 June 4.	Prof. E. B. Cowell, D. C. L. *Cambridge.*
1879 June 4.	Dr. A. Günther, V. P. R. S. *London.*
1879 June 4.	Dr. J. Janssen. *Paris.*
1879 June 4.	Prof. H. Milne-Edwards. *Paris.*
1879 June 4.	Prof. P. Regnaud. *Lyons.*
1879 June 4.	E. Renan. *Paris.*
1881 Dec. 7.	Professor Hermann L. F. Helmholtz. *Berlin.*
1881 Dec. 7.	Dr. Rudolph v. Roth. *Tübingen.*
1881 Dec. 7.	Sir William Thomson, Knt., LL. D., F. R. S., F. R. S. E. *Glasgow.*
1881 Dec. 7.	Professor William Wright, LL. D. *Cambridge.*
1883 Feb. 7.	W. T. Blanford, A. R. S. M., F. R. S., F. G. S., F. R. G. S. *London.*
1883 Feb. 7.	Alfred Russell Wallace, F. L. S., F. R. G. S. *Godalming.*
1883 Feb. 7.	Prof. William Dwight Whitney. *Newhaven, Connecticut,* U. S.

CORRESPONDING MEMBERS.

1844 Oct. 2.	Macgowan, Dr. J. *Europe.*
1856 July 2.	Krämer, A. von. *Alexandria.*
1856 „ 2.	Porter, Rev. J. *Damascus.*
1856 „ 2.	Smith, Dr. E. *Beyrout.*
1856 „ 2.	Tailor, J., Esq. *Bussorah.*
1857 Mar. 4.	Nietner, J. Esq. *Ceylon.*
1858 „ 3.	Schlagintweit, R. von. *Giessen.*
1859 Nov. 2.	Frederick, Dr. H. *Batavia.*
1860 Feb. 1.	Baker, The Rev. H. *E. Malabar.*
1861 July 3.	Gösche, Dr. R.
1862 Mar. 3.	Murray, A. Esq. *London.*

Date of Election.	
1863 July 4.	Barnes, R. H., Esq. *Ceylon.*
1866 May 7.	Schlagintweit, Prof. E. von. *Berlin.*
1868 „ 5.	Holmbōe, Prof. *Christiania.*

ASSOCIATE MEMBERS.

1865 May 3.	Dall, Rev. C. H. *Calcutta.*
1874 Feb. 4.	Schaumburgh, J., Esq. *Calcutta.*
1874 April 1.	Lafont, Rev. Fr. E., S. J., C. I. E. *Calcutta.*
1875 Dec. 1.	Bate, Rev. J. D. *Allahabad.*
1875 „ 1.	Maulawí Abdul Hai, Madrasah. *Calcutta.*
1882 June 7.	Giles, Herbert, Esq. *Europe.*
1883 Feb. 7.	Rodgers, C. J. *Amritsar.*

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule* 40.—After the lapse of 3 years from the date of a Member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following Members will be removed from the next Member List of the Society under the operation of the above Rule:

R. M. Adam, Esq.
Major J. Herschell.
Sir L. S. Jackson.
F. Jones, Esq.
Sir J. Strachey.

LOSS OF MEMBERS DURING 1883.

By Retirement.

H. H. Nawab Alijah Amir-ul-mulk Syed Mahomed Siddeek Hassan, Khan Bahadur.
Babu Sreenath Chunder.
William Crooke, Esq.
Lieut.-Col. R. de Bourbel, R. E.
Ney Elias, Esq.
Major-Gen. G. E. Evezard.
A. W. Garrett, Esq., M. A.
R. Griffith, Esq., M. A.
Babu Jadava Goswami, B. A.
R. Lydekker, Esq.
W. Macgregor, Esq.
R. Maconachie, Esq.
Khalif Syed Mahomed Hassan Khan Bahadur.
G. L. Molesworth, Esq., C. E.
G. Nevill, Esq.

R. W. Nicholson, Esq.
R. Turnbull, Esq.
Dr. W. K. Waller.
P. C. Wheeler, Esq.

By Death.

Ordinary Members.

T. W. H. Tolbort, Esq.
Capt. W. J. Williamson.
Raja Pramathanatha Rai.

Corresponding Member.

F. A. de Roepstorff, Esq.

By Removal.

Under Rule 40.

T. E. Charles, Esq., M. D.
Col. Sir A. Clarke.
Rev. W. C. Fyfe.
T. S. Isaac, Esq.
J. Schroder, Esq.
Dr. A. J. Wall.
T. J. Wheeler, Esq.

Under Rule 38.

Dr. Krishna Dhana Ghosha.
Dr. E. Lawrie.

[APPENDIX.]

ABSTRACT STATEMENT

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1883.

STATEMENT
Asiatic Society

Dr.

To Establishment.								
Salaries					Rs.	4,186	0	6
Commission						309	8	4
Pension						30	6	0
						4,525	14	10
To Contingencies.								
Stationery						212	2	9
Lighting						97	0	0
Building						65	8	0
Taxes						720	0	0
Postage						642	13	6
Freight						24	12	3
Meetings						82	8	0
Miscellaneous						167	12	3
						2,012	8	9
To Library and Collections.								
Books						2,927	7	11
Local Periodicals						43	0	0
Binding						198	10	0
Coins						263	11	10
						3,432	13	9
To Publications.								
Journal, Part I						2,672	3	9
Journal, Part II						767	13	5
Proceedings						1,241	12	6
						4,681	13	8
To Printing charges of Circulars, receipt forms, &c....						181	10	0
To Personal Account (Writes off & Miscellaneous) ...						.....		
To Balance						.....		
					Total Rs.			

		14,834	13 0
		3,545	7 2
		1,43,083	15 0
		1,61,464	3 2

No. 1.
of Bengal.

Cr.

By Balance from last Report			Rs. 1,43,744 5 10
By Cash Receipts.			
Publications sold for Cash	628 3 9		
Interest on Investments	6,190 0 0		
Advances recovered	698 0 0		
Miscellaneous	274 6 1		
	7,790 9 10		
By Personal Account.			
Admission fees	576 0 0		
Subscriptions	8,144 0 0		
Sales on credit	739 12 0		
Miscellaneous	469 7 6		
	9,929 3 6		
Total Income			17,719 13 4
Total Rs.			1,61,464 3 2

J. Westland,
J. Waterhouse, } *Auditors.*

F. W. Peterson,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

STATEMENT

Oriental Publication Fund in account

Dr.

To Cash Expenditure.

Printing charges	Rs.	3,036	11	6
Editing charges		2,161	8	0
Salaries		1,821	15	0
Advertising		120	0	0
Freight		17	0	0
Stationery		3	12	0
Postage		192	15	6
Contingencies		19	0	3
Commission on collecting bills		13	3	9
		7,386	2	0
To Personal Account (Writes off and Miscellaneous) ...		292	9	0
Total Expenditure		.....		7,678 11 0
To Balance		.....		18,968 1 5
Total Rs.				26,646 12 5

No. 2.

with the Asiatic Society of Bengal.

Cr.

By Balance from last Report			Rs.	14,431 2 5
By Cash Receipts.				
Government allowance	9,000	0 0		
Publications sold for cash	1,009	7 3		
Advances recovered	4	4 0		
Interest on Investments	716	2 0		
	10,729	13 3		
By Personal Account.				
Sales on credit	1,476	5 3		
Miscellaneous	9	7 6		
	1,485	12 9		
Total Income, ...				12,215 10 0
Total Rs.				26,646 12 5

J. Westland,
J. Waterhouse, } *Auditors.*

F. W. Peterson,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

STATEMENT

Sanskrit Manuscripts Fund in account

Dr.

To Cash Expenditure.

Salaries	...	...	...		Rs.	1,434	0	0		
Travelling expenses		...		...	...	712	2	0		
Printing	...	...	...		...	2,014	8	0		
Copying	...	...		...	...	44	0	0		
Stationery	...	...	...		...	17	8	0		
Postage	...	...		...	...	42	5	9		
Freight	...	...	...		...	9	0	0		
Commission	...	...		...	...	5	4	9		
Contingencies		...	...		...	162	3	6		
Furniture (teak wood glass-cases)				...	...	264	0	0		
Purchase of MSS.		...	...		...	850	0	0		
						5,555	0	0		
To Personal Account (Writes off and Miscellaneous)					...	1	0	0		
			Total Expenditure		...	.....			5,556	0 0
			To Balance		...	.....			285	13 3
								Total Rs.	5,841	13 3

No. 3.

with the Asiatic Society of Bengal.

Cr.

By Balance from last Report				Rs.	2,479 13 3
By Cash Receipts.					
Government allowance			3,200	0 0	
Publications sold for cash			54	0 0	
Interest on Investments			53	0 0	
			3,307	0 0	
By Personal Account.					
Publications sold on credit			55	0 0	
Total Income					3,362 0 0
Total Rs.					5,841 13 3

J. Westland,
J. Waterhouse, } *Auditors.*

F. W. Peterson,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

STATEMENT

Personal

Dr.

To Balance from last Report ...	.....	Rs.		6,430	7 4
To Cash Expenditure.					
Advances for purchase of Sanskrit MSS., postage of Books to members, &c.		821	14 10		
To Asiatic Society		9,929	3 6		
To Oriental Publication Fund		1,485	12 9		
To Sanskrit MSS. Fund		55	0 0		
				12,291	15 1
Total Rs.				18,722	6 5

No. 4.

Account.

Cr.

By Cash Receipts	Rs.	14,822	14	11	
By Asiatic Society		3,545	7	2	
By Oriental Publication Fund		292	9	0	
By Sanskrit Manuscripts Preservation Fund ...		1	0	0	18,661 15 1

By Balances.	Due to the Society.			Due by the Society.			
Members	3,490	6	2	155	14	3	
Subscribers to Publications	74	14	6	53	3	0	
Employees ...	30	0	0	250	0	0	
Agents	163	14	0	2,204	9	7	
Miscellaneous ...	130	1	6	1,165	2	0	
	3,889	4	2	3,828	12	10	60 7 4

Total Rs. 18,722 6 5

J. WESTLAND,
J. WATERHOUSE, } *Auditors.*

F. W. PETERSON,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

STATEMENT

Invest

Dr.

		Nominal.			Actual.		
To Balance from last Report ...	Rs.	1,53,800	0	0	1,53,152	13	6
To Cash		5,000	0	0	5,126	15	3
Total	Rs.	1,58,800	0	0	1,58,279	12	9

STATEMENT

Trust

Dr.

To Servants' pension	Rs.	36	0	0
To Balance (Servants' Pension Fund)		1,014	1	4
Total	Rs.	1,050	1	4

No. 5.

ments.

Cr.

		Nominal.	Actual.
By Balance	Rs.	1,58,800 0 0	1,58,279 12 9
Total	Rs.	1,58,800 0 0	1,58,279 12 9

J. WESTLAND,
J. WATERHOUSE, } *Auditors.*

F. W. PETERSON,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

No. 6.

Funds.

Cr.

By Balance from last Report (Servants' pension Fund)	Rs.	1,007 11 4
By Interest on Investments		42 6 0
Total	Rs.	1,050 1 4

J. WESTLAND,
J. WATERHOUSE, } *Auditors.*

F. W. PETERSON,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

STATEMENT
Cash.

Dr.

To Balance from last Report	Rs.	2,079	12	0
Receipts.				
To Asiatic Society		7,790	9	10
To Oriental Publication Fund		10,729	13	3
To Sanskrit Manuscripts Fund		3,307	0	0
To Personal Account		14,822	14	11
To Trust Funds		42	6	0
Total Rs.		38,772	8	0

STATEMENT
Balance

Dr.

To Personal Account	Rs.	60	7	4
To Cash		5,011	10	11
To Investments		1,58,279	12	9
Total Rs.		1,63,351	15	0